

NATIONAL ENERGY POLICY: COAL

HEARING

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OF THE

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COMMERCE

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NATIONAL ENERGY POLICY: COAL

WEDNESDAY, MARCH 14, 2001

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON ENERGY AND AIR QUALITY,
Washington, DC.

The subcommittee met, pursuant to notice, at 1:02 p.m., in room 2123, Rayburn House Office Building, Hon. Joe Barton (chairman) presiding.

Members present: Representatives Barton, Largent, Burr, Whitfield, Ganske, Norwood, Shimkus, Wilson, Shadegg, Bryant, Radanovich, Bono, Walden, Boucher, Sawyer, Wynn, Doyle, John, Waxman, Markey, McCarthy, Strickland, Barrett, and Luther.

Also present: Representative Pallone.

Staff present: Joe Stanko, majority counsel; Andy Black, policy coordinator; Bob Meyers, majority counsel; Jason Bentley, majority counsel; Peter Kielty, legislative clerk; Sue Sheridan, minority counsel; Eric Kessler, professional staff; Alison Taylor, minority counsel; and Courtney Johnson, staff assistant.

Mr. BARTON. The subcommittee will come to order. Today is the third in a series of hearings dealing with our national energy policy. Today's hearing is going to deal with the subject of coal, which is a vital part of our energy portfolio.

Coal fuels at least 52 percent of the electricity consumed in our Nation. Its reserves are significant, as are the technological advancements concerning its use that have been made in the last several years.

I have asked the witnesses appearing before the subcommittee today to discuss the current use of coal, statutory and regulatory provisions that impact the supply of coal, the prospects of using coal to meet future generation needs, the use of new technologies, and the role of coal in a comprehensive national energy policy.

This subcommittee has many members who are very knowledgeable about coal. I want to applaud their work on both sides of the aisle, and pledge my commitment to work with them to continue to craft legislation that will allow coal to be a significant energy resource for this country.

I want to especially point out the good work that the ranking member, my good friend, the gentleman from Southwestern Virginia, the Honorable Rick Boucher, has done on coal. He is one of the, if not the, acknowledged leader in the field in this specific energy area.

Congressman Boucher has done yeoman's work trying to push the different parts of the coal sector into consensus. I should not

say push, but trying to encourage, mediate, whatever. And it is my understanding that some of those issues are being worked on literally as we speak so that we can address them in a legislative fashion later before this subcommittee.

It is estimated that the United States possesses 25 percent of the world's total recoverable reserves of coal. We could say that the United States is "The Saudi Arabia of Coal." This strategic resource will not and should not be ignored or neglected in a comprehensive energy strategy.

There are, of course, environmental issues concerning expanded use of coal. I, and many other members of the subcommittee, support the advancement of clean coal technologies. Much has been done to make coal burn more cleanly, but more obviously needs to be done.

This is absolutely not the time, however, to label carbon dioxide as something which it is not, which is a pollutant. Nor is it the time to regulate beyond what is scientifically proven and necessary.

And it is not the time to take coal off the table when in my opinion we need to put it more on the table. Having said that, I want to applaud the Bush Administration for the common sense decision that they made yesterday to not regulate CO₂ as a pollutant.

That is absolutely the right decision at the right time for the right reasons, and as I told high level officials in the Bush Administration, had they not made that decision any so-called four pollutant bill would have not even been dead on arrival before this subcommittee. It would not have arrived at this subcommittee.

So it was the right decision for the right reasons, and I want to publicly applaud President Bush for the decision that he made. As we will discuss next week in our hearings on the California electricity situation, our Nation's consumers desperately need reliable, affordable power.

Power shortages are bad for the economy and the daily life of Americans. If you look at our reserves in the United States, it is absolutely obvious that coal is a resource that we should look to use in an expanded fashion, and in that regard today's hearing is very timely.

I look forward to hearing from the witnesses, and I look forward to working with members on both sides of the aisle of this subcommittee to craft a legislative strategy that does in fact encourage the private sector to expand its use of coal.

With that, I would like to recognize the ranking member, Congressman Boucher, for an opening statement.

Mr. BOUCHER. Well, thank you very much, Mr. Chairman, and thank you for your kind remarks concerning the work that my office has undertaken with regard to coal related matters. And I want to thank you for focusing this afternoon on the potential of coal to make a greater contribution to our Nation's energy, security, independence, and affordability.

With domestic reserves of at least another 250 years, coal is our most abundant domestic energy resource, and more than one-half of the electricity generated in the United States today is produced through coal combustion.

Coal is also our Nation's least expensive fuel. On average, coal-fired power plants produce electricity at one-half the cost of oil-

fired plants, and at current prices at only one-fifth of the cost of plants that are fired with natural gas.

The most certain way for the United States to achieve the greater availability of more affordable electricity is to take the steps this year as a part of our national energy legislation to incent electric utilities to use coal as the fuel for new generating facilities that electric utilities will soon be constructing.

Few new coal-fired plants have been built in recent years. The low prices for natural gas during the past decade made natural gas the fuel of choice for most of the newly constructed generating units.

Even today with much higher gas prices the Energy Information Administration projects that 90 percent of the new electricity generating units to be built in the coming decade will be gas-fired. I hope that with the passage of our national energy strategy legislation, which I look forward to working with Chairman Barton to construct, that we can alter that calculus.

I hope that the provision of a modest set of incentives by way of tax credits for meeting some of the costs of compliance with the Clean Air Act, and through other steps that we can consider taking, that there will be a resulting decision of a large number of electric utilities to use coal instead of natural gas as the fuel for new electricity generating units.

I intend to suggest these modest incentives as our work on the formation of a national energy strategy proceeds. During the course of today's hearing, I would welcome comments from our witnesses on the steps that we should take which will encourage the construction of new coal-fired electricity generating facilities.

Specifically, should we increase the Federal Government's commitment to research and development of new coal related technologies which can increase the efficiency of coal-fired boilers and improve on clean coal technologies.

We are honored to be joined today by Dr. Roe-Hoan Yoon as one of our witnesses. Dr. Yoon is one of the Nation's leading coal research scientists, who has been the recipient of a series of Federal research awards for the ground breaking work that he is doing in pre-combustion coal technology.

The technologies which have been developed in Dr. Yoon's laboratories at Virginia Tech have enabled coal companies to make a cleaner product. His work has also enhanced the use of coal as a fuel by enabling coal companies to recover fine coal particles which might otherwise be discarded, with a resulting decrease in overall coal production costs.

I will be interested today in learning from Dr. Yoon what directions in coal R&D funding are most promising and the effort to encourage greater coal utilization in the generation of electricity.

I will also welcome comments from our other witnesses regarding additional steps at the Federal level, in areas such as tax credits for Clean Air Act compliance costs, more facilitation of the permitting process which might encourage electric utilities to site coal plants with greater ease, which will serve as incentives to electric utilities toward a greater reliance on coal.

Mr. Chairman, I thank you very much for affording these outstanding witnesses the opportunity to comment to us today on the

steps that we should take at the national level, which will result in a greater utilization of coal, and consequently a much greater level of American energy independence. And we have a new chairman, and I thank you, Mr. Chairman, and I yield back.

Mr. WALDEN. Mr. Boucher, thanks for your statement, and I want everyone to know that our chairman is not throwing up his hands. He simply went to take a phone call.

I, too, am delighted that we are having this hearing today on coal. I think all of us recognize that coal must play an important part if we are going to solve our energy problems in the United States for the short term and the long term.

And I am going to submit my total opening statement for the record, but one thing that I wanted to point out today, which I am sure that everyone is very much aware of, is that you cannot talk about coal without talking about the Clean Air Act, and sulfur dioxide, and carbon dioxide, and global warming, and acid rain, and all of those things.

And we are not going to come up with a solution unless all of us can work together from different perspectives on those issues. And Mr. Waxman and I may not agree on everything about the Clean Air Act, but we are all are going to have to work together to solve it.

And I wanted to read just briefly from a book, "A Moment on the Earth," which was written by Greg Esterbrook. And in this particular passage, he is talking about these different polar positions on these issues.

"Global warming can inspire such polar positions because the subject is so pleasingly nebulous. Crime, welfare, health care, most issues are anchored in the muck of the real. The greenhouse effect is a blank screen unto which partisans may project whatever they wish to behold."

"Reactions to the greenhouse issue fracture along the fault lines of conventional politics. Such divisions are found in the science, as well as political, worlds. In the United States the most prominent green house true believers, John Furrer, of the National Center for Atmospheric Research, James Hanson, of the Godard Institute, and Steven Synder, of Stanford, are political liberals."

"The most prominent greenhouse naysayers, Robert Jastrow of Dartmouth, Richard Linzen, of MIT, and Patrick Michaels of the University of Virginia, are political conservatives. In the overheated atmosphere of global warming politics, science is subject to more than the usual misuse."

"Linzen's work is often described by right-wing commentators as establishing that global warming will not happen, something that Linzen himself has never said. He says only that the artificial greenhouse effect is an unproven hypothesis."

"By the same token, but from the opposite perspective, Vice President Gore, for example, attributes to the late Roger Revelle, who is sometimes called Dr. Greenhouse, the notion that global warming means certain doom, something Revelle did not say."

"It was Revelle, Gore has said, who persuaded him that the greenhouse effect is a dire emergency. Yet, before his death in 1991, Revelle co-authored a paper that concludes that the scientific

base for greenhouse warming is too uncertain to justify drastic action at this time.”

I want to point that out because everyone can come up with studies on these issues, and yet as I said, in order to solve the problem we are all going to have to work together, and we are going to have to be reasonable, and I for one also do applaud President Bush for his action on CO₂, which is a natural component of our atmosphere.

And with that, I will conclude my remarks, and the next speaker, we will recognize Mr. Waxman of California.

Mr. WAXMAN. Thank you very much, Mr. Chairman.

Our country needs coal as part of our energy future, but our country also needs to continue to deal with the fact that coal is the dirtiest fuel in widespread use in the United States, and poses the most significant environmental threats from acid rain and urban smog, to global warming.

In politics, too often we talk about tough choices, but never do anything about them. Yesterday, President Bush faced one of the first tough choices of his presidency and he struck out. During last year's Presidential campaign, George Bush tried to convince voters that he would responsibly address the threat of global warming.

In fact, on September 29, 2000, he promised that as president that he would work for legislation requiring power plants to clean up their air pollution, and in his debates with Al Gore, President Bush went on the attack on this issue, highlighting his support for mandatory reductions.

Yesterday in a letter to Senator Hagel, President Bush broke that promise. While the President gives several reasons for his reversal, none of these reasons appear to hold up to scrutiny.

First, the President cites a single highly flawed report to explain that electricity prices would increase significantly if we address carbon dioxide emissions. There have been at least four other studies published in the last 6 months by the Department of Energy and others that all conclude that the cost of a multi-pollutant strategy would be quite reasonable.

Second, the President indicated that we shouldn't regulate carbon dioxide because it is not a pollutant under the Clean Air Act. Well, under this logic, President Bush's father would not have signed the Clean Air Act amendments of 1990, because most toxic air pollutants were not regulated prior to that legislation. Besides, under current law carbon dioxide is specifically listed as a pollutant under Section 103(g).

Third, the President claims that we don't know the causes of and solutions to global climate change. This outmoded rhetoric has been eclipsed by recent scientific consensus and flies in the face of recent reports from the National Academy of Sciences and the Intergovernmental Panel on Climate Change.

And, last, the President cites electricity problems in California as reason not to address the carbon dioxide emissions. This is a red herring. We can seek carbon dioxide reductions over reasonable time periods without disrupting energy production.

The earth climate is changing and the impacts of these changes are dramatic. Temperatures are increasing, and sea levels are rising, and glaciers are retreating, arctic sea ice is thinning. Rainfall patterns are changing, and the El Niño phenomenon is becoming

more frequent, persistent, and intense. The decisions that we make today about how we address or don't address climate change will have a profound impact on the lives of our grandchildren and their children.

We cannot afford to risk the planet's well-being by refusing to address global warming. Mr. Chairman, I have a longer statement which I would like to put in the record.

Mr. WALDEN. Yes, Mr. Waxman.

[The prepared statement of Hon. Henry A. Waxman follows:]

PREPARED STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF CALIFORNIA

Our country needs coal as part of our energy future. But our country also needs to continue to deal with the fact that coal is the dirtiest fuel in widespread use in the United States, and poses the most significant environmental threats, from acid rain and urban smog to global warming.

In politics, too often we like to talk about tough choices but never do anything about them. Yesterday President Bush faced one of the first tough choices of his Presidency, and he struck out.

During last year's Presidential campaign, George Bush tried to convince voters that he would responsibly address the threat of global warming. In fact, on September 29, 2000, he promised that as President he would work for legislation requiring powerplants to clean up their air pollution and said:

"With the help of Congress, environmental groups and industry, we will require all powerplants to meet clean air standards in order to reduce emissions of sulfur dioxide, nitrogen oxides, mercury and carbon dioxide within a reasonable period of time." Then Mr. Bush went even further and released a detailed policy proposal that stated that he would "Establish mandatory reduction targets for emissions of...carbon dioxide."

And in his debates with Al Gore, President Bush went on the attack on this issue, highlighting his support for mandatory reductions.

In short, George Bush promised the American people that as President he would seek a bipartisan agreement that would protect the environment while giving industry some needed regulatory certainty.

Yesterday, in a letter to Senator Hagel, President Bush broke that promise.

While the President gives several reasons for his reversal, none of these reasons appear to hold up to scrutiny.

First, the President cites a single report to explain that electricity prices would increase significantly if we address carbon dioxide emissions. The report he mentions is a highly flawed report from the Energy Information Administration that analyzes a proposal that isn't being advocated by anyone. Other studies published in the last six months by the Department of Energy, Harvard University, the Environmental Law Institute and Resources for the Future, and U.S. EPA, all conclude that the costs of a multi-pollutant strategy will be quite reasonable.

Second, the President indicated that we shouldn't regulate carbon dioxide because it is not a pollutant under the Clean Air Act. Under this logic, President Bush's father would not have signed the Clean Air Act Amendments of 1990 because most toxic air pollutants were not regulated prior to that legislation. Besides, under current law carbon dioxide is specifically listed as a pollutant under section 103(g).

Third, the President claims that we don't know the causes of, and solutions to, global climate change. This outdated rhetoric has been eclipsed by recent scientific consensus. Global warming no longer faces serious scientific doubt. The National Academy of Sciences has stated that global warming is "undoubtedly real." The Intergovernmental Panel on Climate Change recently estimated that global temperatures are anticipated to increase by up to 10 degrees in the coming century and stated that "most of the warming is attributable to human activities."

Last, the President cites electricity problems in California as reason not to address carbon dioxide emissions. This is a red herring. We can seek carbon dioxide reductions over reasonable time periods without disrupting energy production. If the President is genuinely concerned about the price of electricity in California, there are a number of things he can do and should do—starting with granting the request to restrain wholesale electricity prices submitted by the Governors from California, Oregon, and Washington just last week.

The President's broken promise is not only a broken promise to the American people. It is a betrayal to Administrator Whitman, who appears to be taking her role

seriously and has been advocating carbon dioxide reductions, believing that she had the support of the President. Administrator Whitman has a difficult job ahead of her, and President Bush has just made it much harder.

The earth's climate is changing and the impacts of these changes are dramatic. Temperatures are increasing. Sea levels are rising. Glaciers are retreating. Arctic sea ice is thinning. Rainfall patterns are changing, and the El Nino phenomena is becoming more frequent, persistent and intense.

The decisions we make today about how we address climate change will have a profound impact on the lives of our grandchildren and their children. We cannot afford to risk the planet's well-being by refusing to address global warming.

Mr. WALDEN. I recognize Mr. Ganske. He is not here. Mr. Shadegg. He is not here.

Mr. Bryant of Tennessee.

Mr. BRYANT. Thank you, Mr. Chairman, and I want to thank you also for scheduling the hearing on the national energy policy and this particular hearing which focuses on coal.

Coal is an abundant natural resource, and its recoverable U.S. coal reserves total more than 296 billion tons, which is enough to last over 300 years at current levels of use. Coal is among the least expensive energy options that are available to us.

The wide-spread availability and wide-spread transportation infrastructure make the use of coal common in my home State of Tennessee, as well as all across the Nation. The majority of electric power in Tennessee is generated at coal-fired plants, and so my constituents have a particular interest in today's proceedings.

Such a large reliance on coal-fired generation, some chemical emissions are inevitable. Coal-fired generators face numerous environmental regulations aimed at reducing power plant emissions.

These include at least 11 regulatory programs affecting nitrogen oxide controls, and 8 programs affecting sulfur dioxide emissions by 2004. The Environmental Protection Agency's proposed regulations to further restrict coal-based emissions are duplicate, contradictory, complex, financially wasteful, and create a great deal of uncertainty.

Any national energy policy needs to include a comprehensive examination of the implementation of environmental regulations in order to reduce compliance costs and regulatory uncertainty.

Any national energy policy should also emphasize fuel diversity. We have learned from the recent price spikes and shortages that our Nation cannot afford to put all of its stock in natural gas. We must continue to explore various clean coal technologies and renewable fuels for the future.

Our national energy policy must also balance the need for low-cost, reliable power with a sensible approach toward protecting our environment.

In closing, I believe that the sustained development of our coal resources will certainly be an important part of our national energy policy. And again I thank the chairman for holding this hearing.

Mr. WALDEN. Thank you, Mr. Bryant.

Mr. Markey, you are recognized for 3 minutes.

Mr. MARKEY. Thank you, Mr. Chairman. In a September 29 speech, Candidate Bush pledged that if he was elected President that he would require, quote, all power plants to meet clean air standards in order to reduce emissions of sulfur dioxide, nitrogen dioxide, mercury, and carbon dioxide, within a reasonable period of time.

He rejected the notice of voluntary reductions. He said in Texas that we have done better with mandatory reductions, and I believe the Nation can do better. But the election is over. But Christy Todd Whitman didn't get the word.

So last month, she said that George Bush was very clear during the course of the campaign that he believed in a multi-pollutant strategy, and that includes CO₂. She explained to the extent to which CO₂—that introducing CO₂ to the discussion is going to have an impact on global warming, and that is an important step to take.

But now it appears that Administrator Whitman was out of the loop. George Bush has no intention of carrying out his pledge to the American people to curb carbon dioxide emissions.

According to press reports, this campaign promise is being broken as a result of back room lobbying by the coal industry, the electric utility industry, and their Congressional supporters.

The electric utility industry presently accounts for 40 percent of all U.S. emissions of carbon dioxide. Of that, more than 88 percent of power plant CO₂ emissions comes from older, dirtier coal-fired facilities.

The way to deal with coal is to give incentives to replace the inefficient and dirty old baseline power plants with new and more efficient plants to produce more power and emit fewer pollutants while using coal. It is not to avoid the fact that they are creating this great problem.

Apparently the Bush Administration's explicit campaign promises made to the American people to clean up the air we breathe, and to avert the threat posed by global warming means little in the face of big business opposition.

Apparently in the Bush Administration, King Coal still rules. To paraphrase the old song, you burn 16 tons and what do you get? No clean air protections from Bush just yet. So St. Peter don't you call me 'cause they can't go, they have sold our air to the company store. Tennessee Ernie Ford, huh?

Big business is in the driver's seat, and the consumers, workers, and environment are just getting the door slammed in their face once again. The administration reportedly claims that they are abandoning plans to curb carbon dioxide emissions because it would drive up energy prices, but that is a false choice.

We do not have to choose between a healthy economy and a healthy environment. We can have both. The country has repeatedly demonstrated its ability to develop and exploit new technologies to meet our energy needs in affordable and environmentally responsible fashion.

There is no reason why we can't do it again. Mr. Chairman, I invite you to invite Administrator Whitman and Secretary Abraham to testify before our committee at the nearest possible moment in time so that we can understand this raging debate that is going on in the administration, and what it was that caused President Bush to do a 180 degree switch.

Mr. WALDEN. Mr. Markey, thank you for your effective statement. I am glad that you did not sing all of it. At this time, I recognize Ms. Bono for 3 minutes.

Ms. BONO. Thank you, Mr. Chairman. I was wondering if Mr. Markey might know a few bars of "I've got you, Babe," and I will do Sonny's part if you will do Cher's. I have no opening statement other than to thank Chairman Barton for holding his series on energy that he has been holding.

Just to say that I am here to learn more about the issue and to yield my 5 minutes plus to the experts, and thank you all for being here, and I yield back.

Mr. WALDEN. Thank you. Ms. McCarthy, we recognize you for 3 minutes for an opening statement.

Ms. MCCARTHY. Thank you very much, Mr. Chairman, for continuing the series of hearings on important matters for the subcommittee. The energy industry is changing rapidly, and it really is helpful to hear about recent developments.

With respect to today's topic of coal, we have some very important decisions to make about our continued use of this fuel source, with a broader national and global energy and environmental policy in mind.

Coal is clearly the predominant fuel used for electric generation in my State of Missouri, powering nearly 85 percent of the generation, far more than the national average. Because of very important air quality concerns, there are few new coal plants being planned anywhere in the country, except in Kansas City. Kansas City Power and Light has rebuilt the Hawthorne-5 plant after a fire 2 years ago, with the latest clean coal technologies that are available to the industry right now.

It will be the cleanest coal plant in the U.S. due to these new technologies built for the plant. It is my understanding that Kansas City Power and Light was able to work with the EPA on meeting new source review requirements as they undertook this work.

Mr. Chairman, we need to provide for streamline regulations to utilities who want to undertake the installation of these new technologies and update their plants, and I believe that is something that we should explore, and hopefully our witnesses today will provide us with some ideas of what we can be doing to assist.

On the other side of the State, I learned just yesterday that EPA has made a preliminary determination that the St. Louis area will not meet the target national ambient air quality standards by the appointed deadline. They are working with the local officials before making the decision final.

With these types of developments in mind that I look forward to hearing from all the witnesses, but especially about how we can strike the proper balance for coal within our set of fuel resources. I am interested in learning more about the clean coal technology program, and making sure that all sectors of the energy industry can avail themselves of the latest technologies that are available.

It is necessary to utilize all our resources in as an efficient and clean manner as possible as we work to ensure adequate energy supply, within a framework of environment responsibility, and I think, too, national security.

Thank you, Mr. Chairman, and I look forward to the testimony from the experts today.

Mr. WALDEN. Thank you, Ms. McCarthy. I recognize Mr. Norwood for 3 minutes.

Mr. NORWOOD. Mr. Markey, I knew Tennessee Ernie Ford, and sir, you are no Tennessee Ernie Ford. Mr. Chairman, I thank you for conducting our hearing today on the subject of coal and its critical importance as part of our national energy policy.

I applaud you for your leadership on this issue, and your straightforward comments recently when you stated that the United States is to coal what Saudi Arabia is to oil. Indeed, the United States has tremendous natural resources of coal, providing the most abundant domestic source of energy in our country.

Utilization of these resources is a key component to achieving what I believe is everyone's primary goal, which is U.S. energy interdependence. Frankly, turning our back on coal is not very realistic, nor economical.

Being ever mindful of the environment, we must continue to find ways to improve the environmental performance of coal-fired power plants. Much has been done under the Federal Clean Air Act and more will be done in the future.

Sound, fact-based science, fact-based science is critical to maintaining a balance approach between U.S. energy security concerns, and the environment. Continuous improvements made through technological investment and development of clean coal technology affirms coal's viability as a fuel option for electricity and for generators.

The development of such technology should continue to ease environmental concerns, while allowing the United States to utilize this precious resource. I am proud to say that the Nation's premiere research facility for clean coal research is located in the southeastern part of the United States, and operated by Southern Company, the parent company to Georgia Power, who serves many of my constituents.

This plant is an important research facility in the Department of Energy developing new and cost-effective ways of converting coal into gas, which would be used, in-turn, to generate electricity.

The processes being developed in this facility will remove significant amounts of the byproduct pollutants generating roughly one-third less carbon dioxide per unit of energy than a current typical coal-fired plant.

Proven research leading to valuable technologies will ensure that coal will continue to be an essential contributor to the future energy needs of our country.

Mr. Chairman, I truly thank you for this opportunity to hear the testimony of respected officials within the coal industry today, and appreciate your continued leadership on these issues. I look forward to working with you and other members of this subcommittee as we strive to craft comprehensive and coherent energy policy.

Mr. BARTON. Thank you, Congressman Norwood. We would now like to recognize Congressman Luther for an opening statement. And I want to apologize that I missed Congresswoman McCarthy's opening statement, which I wanted to hear. And I apparently missed Mr. Markey's serenade, which I want to get in.

Mr. WALDEN. You did not want to hear it.

Mr. BARTON. Congressman Luther.

Mr. LUTHER. Thank you. Thanks, Mr. Chairman, and thanks for holding this hearing today. I am especially interested in the initia-

tives where environmental and energy policymakers are coming together with promising new technologies.

As this committee works to develop a national policy, it is time—if not Mr. Markey's singing—that we at least take various seriously the points made by Mr. Markey and Mr. Waxman today in their opening statements, and have a very strong focus on the development and application of new ideas that can reduce harmful effects on the environment.

Once again, Mr. Chairman, I want to thank you for assembling a diverse panel, representing a wide range of interests. It is something that I appreciate very much, and I yield back the balance of my time.

Mr. BARTON. I think the gentleman. The gentleman from Illinois, Mr. Shimkus, is recognized for an opening statement.

Mr. SHIMKUS. Thank you, Mr. Chairman. In response to my friend, Congressman Markey, I think it is John Denver who sang, "Take Me Home Country Road," and it extolled the virtues of West Virginia, which those of us in the Republican Party really appreciate the benefit that West Virginia did to help us get back on a national energy strategy.

And I am also very thankful to have, and recognize Mr. Cecil Roberts, who I have been working with to keep a mine open in my district, and I have good news for you, Cecil. In about 1½ hours, Cilco is going to do a press release, and they are going to keep Crown-2 open.

They negotiated in good faith, and that is late-breaking news, and in fact that is why I was late trying to get people informed and to be prepared to receive that; and saving Illinois' miner's jobs, and saving another opportunity as we address a national energy policy, and the fact that we still have another mine open to address our pressing needs.

And it will be interesting to—and this is a bipartisan issue. You are going to hear support for your industry and your workers on both sides of the aisle, and that is always important to remember as we address the needs of working men and women in the coal fields, because you have a lot of support from our side of the aisle to keep these mines open.

Illinois coal is huge to Illinois economy. It is our third largest industry, and 20 Illinois mines employ about 3,700 miners, and generate about 25,000 spin-off jobs. Only 9 years ago, we had 27 mines, employing over 5,000 miners, and we have decreased.

And I am not going to read the whole statement, and I will submit it for the record. But what I want to say is that in the debate—and this is nothing new for those who have followed these committee hearings—in the debate on a national energy policy, we have to have a diversified portfolio of fuels, just like people should have a diversified portfolio in investments. That is the safest way to make sure that you are not swung by the winds of the market forces. [The statement appears at pg. 98.]

Too long this country and the past administration has relied on one fuel of choice, and that has been natural gas. And my citizens have taken a beating on natural gas prices because of that. Natural gas is a good product, but we need to have multiple choices of mul-

tiple fuels, and allow the market to choose the best fuel for the best use.

That is what we are going to get to, and I know that the chairman is focused on a national energy policy that will encourage a great diversification, and allowing the market to choose.

And I am excited about it, and I am excited about the future of Illinois coal. We have just got to keep these coal mines open until we have a time to address a national policy, and then we will have a growing industry in southern Illinois.

And I welcome you, and I welcome the panel, and I yield back my time, Mr. Chairman.

Mr. BARTON. I thank the gentlemen from Illinois, and would recognize the gentleman from Pennsylvania, Mr. Doyle, for an opening statement.

Mr. DOYLE. Mr. Chairman, I want to thank you for scheduling this hearing on coal as part of an ongoing series of discussions on a national energy policy. It will be reiterated numerous times during the course of the hearing that coal continues to play a pivotal role in meeting our Nation's energy needs, and thus should be appropriately incorporated into any energy legislation worthy of consideration.

It is my hope that today's discussion will help facilitate a better understanding about the importance of examining coal use and production from a number of perspectives, including short and long term needs, trends in energy consumption, emerging technologies, and environmental regulations.

According to the Energy Information Agency, Pennsylvania is the fourth top coal producing State in the country, and Pennsylvania is among the top three States that contribute to coal mine employment.

Coal has played an undeniable role in shaping Pennsylvania, its people, and its economy, but the influence that coal has in Pennsylvania is not simply isolated to the mountain mining towns of Southwestern Pennsylvania. It can be found in the Pennsylvania steel industry, research facilities, and waterway commerce.

While I appreciate having the opportunity to stress the fact that coal is a valuable resource that should and cannot be ignored, it is critical that we do not lose sight of keeping our discussion within the context of electricity deregulation.

A concern I do have about increased electricity deregulation is that in response to limits placed on emissions, it will be necessary for almost all coal-fired plants to undergo extensive retrofitting. As a result, I fear that utilities will decide that it will not be cost effective to continue to operate these plans.

This means confronting a choice between finding alternative sources of electricity, or further developing a new generation of clean and efficient burning plants. If coal's contribution is minimized, we would have to rely on natural gas to an even greater extent to meet our growing electricity needs.

Now, while natural gas has a significant role to play in our Nation's energy future, we must be realistic about the infrastructure challenges that must be met to the extent necessary for natural gas to fulfill so significant a role.

Thus, there continues to be a great interest in developing cleaner, more efficient, coal combustion technology. Not only will this type of technology benefit the environment and influence the nuisances of electricity deregulation, that it will also bolster our economy on a number of fronts. Specifically, our domestic steel industry.

I am particularly proud of the coal oriented projects under way at DOE's national technology laboratory, which is located in my Congressional district. NATL has been working in partnership with members of steel and iron industries, and their coal suppliers, for nearly two decades.

Through NATL's collaborations with industries, advanced technologies have been developed that make energy production and use more efficient, cost effective, and environmentally friendly.

Mr. Chairman, I will submit the rest of my statement for the record, and thank you, and I yield back.

Mr. BARTON. I thank the gentleman from Pennsylvania. Before we recognize Congresswoman Wilson, I want to make an introduction of my own. I have two of my Congressional district staff members from down in Texas up this week.

They wanted to see if I ever did real work. They are standing in the back of the room; is Deborah Rollins, and Ms. Linda Gillespie. So we welcome them to the subcommittee. You can go home and say I do work up here.

Mr. BURR. Is that why the chairman did not start this until one o'clock?

Mr. BARTON. It may be one of the reasons. The gentlelady from New Mexico is recognized for an opening statement, Congresswoman Wilson.

Mrs. WILSON. Thank you, Mr. Chairman. I would only make two comments. The first is that I am very interested to hear what you all have to say about the role of coal in a comprehensive national energy policy. And if there is anyone who doubts or who doubted a year ago that we need an energy policy, I don't think there is anybody who doubts it today.

Natural gas prices are at all time highs, and rolling blackouts in California, and the failure of Federal Agencies to work together to make regulatory decisions that favor American independence or energy independence, rather than just to bring their own narrow constituencies, and we need to fix that.

The only comment that I would make with respect to coal is that the State of New Mexico is not only a coal-producing State, but 70 percent of our electric power comes from coal, and the remainder comes from a small percentage of natural gas, and the rest from nuclear energy from the Palo Verde Plant.

But one of the things that I worry about is the effect that regulations have, and it is the law of unintended consequences, where we try to put in place regulations and rules that will encourage clean air with—I guess them call them the best available control technology requirements, that actually discourage incremental improvements in both efficiency and air quality.

And as a result, what we are doing is not getting the most that we can of megawatts out of the coal that we produce. Those kinds of things, the law of unintended consequences or regulations, are

some of the things that I think you need to address in a national energy policy.

We have had hearings in this committee which have shown how hydropower is going down the spillways in this country because of a regulatory process that discourages the development of hydropower, and now we are going to hear the same thing I think today with respect to coal.

That we are not getting the most out of our coal supply because of regulations that discourage the incremental improvements which would not only improve the efficiency of the power plants, but would reduce the noxious emissions from those power plants.

The Federal Government needs to stop regulating in that way, and provide flexibility to those who supply power to the American consumers, and encourage protection of the environment at the same time. Thank you, Mr. Chairman.

Mr. BARTON. I thank the gentlelady, and I now recognize the gentleman from Louisiana, Congressman John, for an opening statement.

Mr. JOHN. Mr. Chairman, I have a official statement that I would like to be reflected in the record. I just want to say thank you for not only this committee hearing today, but also the series of committee hearings that you have held that I believe will have a profound impact of what I hope will be the top priority of this subcommittee and our full committee putting together an energy policy for this country.

And obviously coal and the future of this industry is important; coal is a natural resource and as a fuel source, it is abundant. It also has a cost advantage over other fuels that is very, very important, and coal will and should play a very important part, and be a component of what I think any energy strategy that we have in this country.

So thank you for having this hearing, and I really anxiously await the panelists' comments. Thank you very much.

[The prepared statement of Hon. Chris John follows:]

PREPARED STATEMENT OF HON. CHRIS JOHN, A REPRESENTATIVE IN CONGRESS FROM
THE STATE OF LOUISIANA

Thank you Mr. Chairman for holding this hearing on the role of coal in a comprehensive national energy policy. I will be brief with my remarks.

As the nation's single largest energy source for electric power generation, and with an abundant domestic supply, coal is and will continue to be a critical resource in meeting our nation's growing energy needs.

I support the coal industry. Too often, Americans take for granted the contributions of our domestic mining industry and its hardworking employees.

I support coal-fired generation of electricity. It is in our nation's best interest to have a diverse mix of fuel sources since over reliance on any single source jeopardizes our domestic energy security.

I support further research and development into clean coal technology. Fossil fuels will be the cornerstone of any energy policy for the foreseeable future, so we must continue advancing research into higher efficiency and reduced emissions.

As a high emissions producing fuel source, coal-fired generation raises a legitimate issue in this subcommittee regarding the relationship between competing demands for cheap, reliable power and cleaner air. I do not hear from any constituents who wants dirty air. But I also do not hear from any constituents who want higher electricity bills or less reliable service. We must develop an energy policy that reflects a sensible balance, and I believe this committee can find common ground on these important issues.

Mr. Chairman, I thank you for calling this hearing and I look forward to the testimony of today's witnesses.

Mr. BARTON. I thank the gentlemen from Louisiana.

I would recognize the gentleman from Oregon, Mr. Walden, for an opening statement.

Mr. WALDEN. Thank you, Mr. Chairman. I want to thank you for this hearing and I don't plan to sing to the panel. I plan to listen to the panel, and with that I will return my time.

Mr. BARTON. All right. We would now go to the gentleman from Wisconsin, Mr. Barrett, for an opening statement.

Mr. BARRETT. Thank you, Mr. Chairman, I, too, shall be brief. I want to thank you for convening this hearing as part of a series of hearings on energy in the United States. I also want to thank the witnesses for being here today to discuss what role coal can play in meeting the Nation's overall energy supplies.

I think all of us recognize the soaring natural gas and oil costs, combined with the surging demand for energy, suggests that we can't abandon coal as an important power source. Therefore, we must work to lessen coal's impact on the environment by enhancing clean coal technologies.

I am especially pleased that Dick Abdoo is here from the Wisconsin Energy Corporation to share his company's power the future plan with the committee. This innovative plan, developed in close consultation with consumer protection groups, calls for the construction of three new coal-fired power plants in Wisconsin.

It has been greeted and applauded as environmentally sound, fiscally efficient, and hopefully will ensure that residents and utilities in Wisconsin will have energy needs filled for the long haul. I am hopeful that if it works out as it is being touted that it will serve as a model for the Nation.

So I look forward to hearing your testimony, as well as the testimony of the others here today. Thank you, Mr. Chairman.

Mr. BARTON. I thank the gentleman. The vice chairman of the subcommittee, the gentleman from Oklahoma, Mr. Largent, is recognized for an opening statement.

Mr. LARGENT. Mr. Chairman, thank you for holding today's hearing to examine what role the use of coal has in a national energy policy. Traditionally, coal has been the electricity generation source of choice for many of our Nation's utilities.

According to the Energy Information Administration, coal accounted for about 52 percent of all generation by electricity producers and co-generators in the year 2000. During the 1990's, government regulations and mandates discouraged the use of coal as an electricity generating source, largely due to the detrimental health impacts associated with the burning of coal.

The power industry needed to find a cleaner, more efficient generation source. Natural gas seemed like a natural fit. Natural gas is energy efficient, produces lower sulfur dioxide, and nitrogen oxides, and up until last year was relatively cheap.

The need for natural gas became so great that current supplies are not sufficient to keep up with present demands. Consequently, natural gas prices spiked nearly \$10 in MCF late last year, and now coal looks as though it could be the electricity generation of choice for many utilities.

I will be interested in hearing our witnesses' perspective on the advances of clean coal technology and the associated environmental

benefits, and how the utilities plan to retire many of these 40 year old coal-fired base load plants as base load demands continues to rise.

How much will it cost utilities who own coal-fired plants to comply with the new source permitting review process; and finally, how will those costs impact consumers. Mr. Chairman, I look forward to an informative hearing.

Mr. BARTON. I thank the gentleman from Oklahoma. The gentleman from Ohio, Mr. Sawyer, is recognized for an opening statement.

Mr. SAWYER. Thank you, Mr. Chairman. I will submit a longer statement for the record, but I wanted to join our colleagues in thanking you for this series of hearings, and for the recognition that whatever the source of energy, the fuel—natural gas or coal, or oil, or nuclear—there are tensions among benefits and costs, and needs, and risks, and evolving technologies that are a part of the evolving business of developing a national energy strategy.

With a short-term crunch and growing long-term needs, it is clear that with about a quarter of the world's coal that it will continue to be a critical component in any solution to our energy shortfalls.

But the increased use of coal obviously brings serious environmental questions. So we need to recognize that while coal may be less costly as a resource, its responsible use is more expensive than it first appears. That is what we are here to talk about today I think in no small part.

The kind of hopes that we have had for a combination of technologies that is every bit as diverse as the fuel portfolio, and we think in terms of post-combustion treatment, a variety of different burn technologies that have been worked on over the last several decades, and the many decades-old struggle toward practical liquification or gassification of coal is really a part of what we are here to hear about today, and I look forward to doing that, and once again thank you for the hearing, and I gave back the balance of my time.

Mr. BARTON. I thank the gentleman from Ohio. The distinguished vice chairman of the full committee, who has been somewhat under the weather this week, but is looking more chipper, the gentleman from North Carolina, Mr. Burr.

Mr. BURR. I thank the chairman, and I also ask unanimous consent to enter my statement into the record, Mr. Chairman.

Mr. BARTON. Without objection.

Mr. BURR. And applaud the chairman for his work on an energy policy that is long overdue. Mr. Chairman, let me mention at this time, that when I heard of the President's change as it related to his stated campaign promise, I actually applauded it.

I want to read a statement from his letter. He said, "At a time when California has already experienced energy shortages, and other Western States are worried about price and availability of energy this summer, we must be very careful not to take action that could harm consumers."

Good leadership is making tough decisions. Sometimes it is turning to the public and saying I was wrong. It is not going to please

everybody. There are individuals that would like to see that in granite.

I think that the challenge in front of this committee is to have a long term energy strategy that fulfills both obligations; protection of this planet, and at the same time an energy policy that allows generation to grow with the demand and with the population of this country.

I believe it is possible to reach both of them. It is impossible to reach it without a long term energy policy, and my hope is that through this we are able to do that very quickly. I thank the chairman.

[The prepared statement of Hon. Richard Burr follows:]

PREPARED STATEMENT OF HON. RICHARD BURR, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF NORTH CAROLINA

Mr. Chairman, I wanted to thank you for holding this hearing on our national energy policy which will focus today on the coal industry. As we have watched over the past year the volatility of the natural gas and petroleum markets, it has become increasingly apparent that our nation's domestic energy policy have a multi-dimensional portfolio of energy sources. If we continue down a path of relying on one or two sources of energy to fuel our nation's homes, schools, and economy in general, we will continue to be held hostage to fluctuating prices as demand continues to outweigh supply.

Therefore, it is necessary that until we can further expand our energy portfolio to include new AND AFFORDABLE non traditional energy sources like wind, biomass, geothermal and other renewable energy sources, we must continue to develop our existing traditional sources like coal. The most recent numbers show that nationwide, some 52% of all U.S. generating capacity is coal-fired. The most recent numbers for North Carolina show that in 1999, 61% of utility generation in our state came from coal-fired facilities.

However, the trends show that, because of various government regulations, lawsuits and potential international agreements, coal-fired generation will decrease by 2020 to around 44%, with the 8% difference to be made up by natural gas-fired generation. Couple this with estimated growth of consumption to increase by 48% in the same time period and our supply problem becomes much more worrisome.

There are in place several R&D programs aimed at the Clean Coal technology that will address controls on Sulfur Dioxide (SO₂) via the use of scrubbers as well as controlling the amount of NO_x. Unfortunately, these programs were kept on life support during the previous Administration while regulation upon lawsuit upon regulation led many, save our friend from Wisconsin who is here to testify today, to flee the construction of coal fired plants during the 1990's.

The Bush Administration, by contrast, is planning on aggressively pursuing these R&D projects. It makes no sense that we can sit on a supply of energy larger than the WORLD'S KNOWN OIL RESERVES, which could supply our country with almost three centuries worth of energy, without putting forth an aggressive effort to efficiently and responsibly use it to make sure every American has affordable and clean energy. I look forward to the panel's testimony and plan on offering questions to the panel at the appropriate time.

Mr. BARTON. Thank you.

All members of the subcommittee present have had a chance to make an opening statement.

The Chair would now recognize the distinguished member of the full committee, who is a past member of the subcommittee, Mr. Pallone, for a brief opening statement.

Mr. PALLONE. Thank you, Mr. Chairman. I do appreciate the opportunity to joint the subcommittee today, and I want to say that I am happy that the subcommittee has been proactive with regard to the Nation's energy policy.

I have to say though, Mr. Chairman, that I have to express my disappointment in President Bush's decision to back down from the

campaign promise to regulate carbon dioxide from power plants. I believe if the Bush Administration is serious about a balanced energy policy that improves air quality, curbing carbon dioxide emissions has to be part of that solution.

In spite of the administration's recent statements, I remain dedicated to passage of a multi-pollutant emissions reduction bill, a bill that addresses carbon dioxide and nitrogen oxide, sulfur dioxide, and mercury.

And I will be reintroducing my four pollution emissions reduction legislation within the next 2 weeks. I mention this legislation because I think it is important, because coal power plants emit about a third of the U.S. carbon dioxide emissions, and I have never been among those who favor shutting down all our coal-fired plants.

But I do believe that we should make our plants as clean and efficient as possible. Coal needs to be a part of our energy plan, but we must be sure that before any new coal generating facilities are built that we address emissions from existing facilities.

Emission pollutions from many coal-burning plants are typically transported by air currents to the northeastern States, like my home State of New Jersey, and then we bear huge health and environmental costs of the pollution, and the economic costs of cleaning up.

In downwind States, pollution effects are mitigated by installing ever more pollution control equipment on local smokestacks, building expensive mass transportation systems, and using oxygenated fuels to reduce car emissions.

Additionally, recent studies show that people who live within 50 miles of coal-fired plants face the most significant health impacts. If we expect increases in coal-generating units, we need to establishing environmental standards today so that any new plants that are built can be engineered with long term investment security.

Now, aside from a strong four pollutant bill, I believe we must pursue greater investment in the research and development of clean coal technologies. Such efforts will help reduce harmful emissions that contribute to smog, as well as greater atmospheric concentrations of greenhouse gases.

In drafting my bill, I worked with utilities, clean coal groups, and environmental groups to create comprehensive and realistic legislation, and my legislation provides a market-based solution to mitigate the impact that emissions have on the environment, including carbon dioxide, by establishing a cap for the trade system.

Mr. Chairman, in conclusion, I just want to stress that I think we need to recouple energy and environment policy. First, the Federal Government must guarantee that our environment is not degraded as a result of any increased use of coal generation.

Second, no State, town, or company, should unfairly bear the environmental costs of a national energy policy or the economic costs for environmental protection. And, third, we must ensure that clean and renewable energy technologies are not unfairly disadvantaged.

And we should not let the administration's ideology stop us from implementing what is right for the American people. And again I want to thank you, Mr. Chairman, for the opportunity to speak and join you this afternoon.

Mr. BARTON. I thank the gentleman from New Jersey, and we look forward to his full participation when our legislative package begins to move to the full committee, and you are always welcome at the hearings of the subcommittee.

Seeing no other member present who has not had an opportunity, the Chair would ask to make an opening statement, and the Chair would ask for unanimous consent that all members not present have the requisite number of days to put their official opening statement in the record.

Is there objection? Hearing none, so ordered.

[Additional statements submitted for the record follow:]

PREPARED STATEMENT OF HON. ED WHITFIELD, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF KENTUCKY

Thank you Mr. Chairman. Coal in Kentucky is a \$2.7 billion a year industry and helps to keep our electricity rates among the lowest in the country.

Over half of the electricity generated in the United States comes from burning coal. Forecasts from the Energy Information Administration tell us we will continue to rely on coal for approximately half of our electricity needs for at least the next two decades. Meanwhile, by 2020, the consumption of electricity in the U.S. is expected to grow 35% and world-wide consumption is projected to grow by 70%.

Fortunately, the U.S. possesses close to 25% of the world's total recoverable reserves of coal. Coal constitutes approximately 85% of our fossil fuel resources here in the U.S.—enough to last more than 250 years at current rates of consumption. Since 1970, overall emissions from U.S. coal-based generating plants have been reduced by one third while electricity produced from coal has tripled.

Although I think we should continue to develop renewable sources of power, we cannot ignore the present day reality that coal-generated electricity is indispensable to warming our homes and running our businesses. Instead, this Congress should work to develop more environmentally-friendly methods of using coal to generate electricity.

The Department of Energy's Clean Coal Technology Program has been working with industry for over 15 years to resolve this challenge. I would like to congratulate President Bush for pledging \$2 billion over ten years for clean coal technology. While this program has helped develop advanced coal-based generating technology, we must also do more to encourage the application of this technology within the time frames envisioned by our environmental laws. Therefore, I intend to introduce bipartisan legislation with my colleagues Rick Boucher and Al Mollohan to create a comprehensive coal-based technology program to reduce emissions and improve efficiency in existing coal-based generating plants and stimulate deployment of advanced technologies to further reduce emissions and improve efficiency in new generating facilities.

The environmental benefits of this legislation are clear. One of the goals is further reductions in emissions from the retrofit of systems for continuous emission control and repowering. Nitrogen oxide emissions are projected to be reduced by over 740,000 tons per year, a 24% reduction from 1999 levels. Sulfur dioxide emissions are projected to be reduced by over 2,457,000 tons, a 28% reduction from 1999 levels. And in spite of the fact that the installation of systems of continuous emission controls decreases unit efficiency and increases carbon dioxide emissions by 2%, the reduction in carbon dioxide emission from the repowering applications are projected to result in a net reduction of over 11,722,000 tons.

I look forward to hearing from the witnesses and hearing the opinions of my colleagues.

PREPARED STATEMENT OF HON. GREG GANSKE, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF IOWA

Mr. Chairman—I appreciate the opportunity for the committee to hear from these upcoming witnesses on the role of coal in our national energy generation needs. It is predicted the United States will set a record by consuming 1.085 billion tons of coal this year, which is 21 million more tons than were used in 2000. Obviously, it is an important part of our national energy strategy. I am also very interested in developments in the area of clean coal technology. According to the Energy Department there are now 38 Clean Coal Technology projects around the country, 25

of which are currently operating. I look forward to hearing more about that subject this afternoon.

I would also like to take this opportunity to raise the option of combining the use of biomass with the burning of coal. We have a facility in Iowa which I visited earlier this year that is exploring this concept right now. The generating station at Ottumwa, Iowa is currently cofiring switchgrass with coal to create 35 megawatts of generation capacity. This is currently only about 5 percent of the plant's 650 megawatt generation capacity, but it has many benefits. The Chariton Valley Biomass Project use of switchgrass to displace just five percent of its coal use is projected to reduce carbon dioxide emissions by nearly 177,000 tons per year.

The use of biomass crops such as switchgrass also has other benefits. The grass can be planted on highly erodible land in my state, which helps prevent soil erosion and water contamination and also provides for additional wildlife habitat. Their process of using switchgrass is also projected to reduce sulfur dioxide emissions by as much as 113 tons per year. Using the current values of tradable emission credits that could potentially be derived from a shift to switchgrass cofiring, the reductions in greenhouse gases and sulfur dioxide emissions could be worth an estimated \$420,000 annually.

This is just one example of the benefits of cofiring biomass and coal. I think it is a creative solution and an example of the type of innovative approaches and combination of practices that our country needs to help deal with our expanding energy demands. I look forward to hearing more about the current coal situation in our nation from today's witnesses. Thank you Mr. Chairman.

PREPARED STATEMENT OF HON. JOHN SHADEGG, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF ARIZONA

Today's hearing on the role of coal in national energy policy is very timely. Last week's hearing on the energy situation in California and the Western United States helped to educate Members on the very tight supply of electric generation capacity in much of the West. While we are moving forward to address this shortage in the only way which will actually produce long-term results, namely the construction of new generation, there is a devil in the details. Almost all of the planned generation capacity is natural gas.

I strongly support the use of natural gas for generation because of its relatively low cost, its ability to provide peaking power, its clean burning qualities, and the rapidity with which a natural gas plant can be constructed. I am proud that my state of Arizona has plans to more than double its generating capacity by adding as many as 20 new natural gas fired plants. However, I am worried that this may create an over-reliance on natural gas.

Investors realize the importance of putting their financial assets into a diversified and well-balanced portfolio. Likewise, makers of energy policy should realize the importance of diversified sources of generation.

Diversification means that electricity supply and price are not dependent upon the prices and shortages of a single resource. It means greater independence for the United States from foreign sources of supply and the vagaries of public policy. It means that each type of generation can be used for what it does best; nuclear and coal for base load, hydropower and natural gas for peaking power.

Coal is an absolutely vital element of this diversified energy portfolio. It currently produces slightly more than half of the electricity generated in this country and will continue to play a vital role. Coal is an extremely abundant resource; a fact which keeps the price low. Its use increases our energy independence since approximately one quarter of the world's estimated coal reserves are in the United States. Since it can be economically moved by train and truck, it is unaffected by shortages in pipeline capacity.

Two key issues are going to affect the ability of utilities to fully utilize this resource. First, the effects of coal fired generation on air quality must be addressed through both the continued development of new affordable technology to reduce emissions and through the intelligent application of environmental regulations.

In this regard, I welcome yesterday's decision by the Administration to refrain from imposing new restrictions on carbon dioxide emissions from coal fired plants. At a time when states throughout the West are faced with major electricity shortages, it would have been foolish to further reduce generation capacity by targeting a substance which does not have a direct negative impact on human health.

The second issue which must be addressed is access to clean-burning coal deposits on federal lands in the West. Approximately one third of coal reserves in the United States are located on federal land. Much of this coal is low in sulfur and produces

relatively small levels of nitrous oxide when burned in generating plants. Unfortunately, the previous Administration pursued a myopic policy towards federal lands which ignored the benefits to energy supply and air quality from making this coal more readily available. It did so by declaring an oversized national monument in southern Utah which put off limits 23 billion tons of recoverable low sulfur coal. To put that in perspective, 23 billion tons is enough to meet U.S. demand, if demand holds at current levels, for about twenty years.

Future coal production on federal land was also restricted by interpreting such land use laws as the Federal Land Policy Management Act in ways which prevent mining in large areas. Hopefully, current electricity shortages will help more policy-makers to understand the importance of taking a broad view of the impact of environmentally based restrictions.

Let me close by thanking Chairman Barton for focusing today's hearing on the place of coal in America's energy policy and for scheduling a hearing in two weeks on nuclear power. Both coal and nuclear are vital elements in our energy strategy and, despite the vilification which some have directed against these two energy sources, will remain essential to our electricity supply for the foreseeable future.

PREPARED STATEMENT OF HON. W.J. "BILLY" TAUZIN, CHAIRMAN, COMMITTEE ON ENERGY AND COMMERCE

Mr. Chairman: I want to thank you for conducting an informative series of National Energy Policy hearings, and especially for today's hearing on coal. Chairman Barton and I realize that an effective, coherent national energy policy can be developed only after looking at the complete picture, instead of a haphazard, piecemeal approach. Coal is a part of that big picture. Today, over half of the electricity in the United States comes from coal. For the foreseeable future, coal will continue to supply a significant amount of our energy. In the current energy market, with many States facing supply shortages and lack of sufficient new generation, it would be foolhardy to shut off half of our electricity supply. Nor, as the California situation has demonstrated, would we be well advised to put all our eggs in one basket with regard to a fuel supply.

This does not mean, however, that the environment must suffer. We will hear today about clean coal technology that is in use now, and additional technological advances that will be used in the near future. Moreover, new coal-fired power plants must meet strict air pollution standards that ensure the protection of our children and the environment. The technology is available to meet or exceed these standards, and I am excited to hear about some of the power plant projects that our witnesses will discuss today.

Finally, I'd like to thank our witnesses for their testimony. We have a distinguished panel that will cover all aspects of the issue, from coal production to power generation, from labor issues to environmental impacts, from clean coal technology to consumer impacts. Mr. Chairman, I welcome the opportunity to hear more about this important energy policy issue, and I yield back my time.

Mr. BARTON. Lady and gentlemen, we welcome you to the subcommittee. We are here to hear from you. Your testimony is in the record in its entirety, and I want to compliment each and every one of you. We got it in on time. That is the first time this year that everybody has gotten their testimony in on time. So we thank you.

We are going to start with our administration witness, and we will hear from you for 6 minutes, and then we will just go right down the row. There are several of our witnesses that members of the subcommittee wish to introduce in a little bit more detail. So when we get to you, we will let the members introduce you. Welcome to the subcommittee.

STATEMENT OF MARY J. HUTZLER, DIRECTOR, OFFICE OF INTEGRATED ANALYSIS AND FORECASTING, ENERGY INFORMATION AGENCY, DEPARTMENT OF ENERGY

Ms. HUTZLER. Mr. Chairman, and members of the subcommittee, I appreciate the opportunity to appear before you today to discuss the current and future utilization of coal in the United States.

The Energy Information Administration is an autonomous statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data analysis and projections for the use of the Department of Energy, other government agencies, the U.S. Congress, and the public.

The projections in my oral testimony are from the Annual Energy Outlook 2001, which provides projections and analysis of domestic energy consumption, supply, and prices. These projections are not meant to be exact predictions of the future. They represent a likely energy future given technological and demographic trends, current laws and regulations, and consumer behavior.

Coal is our Nation's most abundant fossil fuel resource, with total resources estimated at nearly 4 trillion short tons. The demonstrated reserve base for coal, roughly equivalent to the discovered resource base, totals more than 500 billion short-tons, of which estimated recoverable reserves is 275 billion short tons.

U.S. production was 1,087 million short tons in 2000, a 1.2 percent decline from 1999. This represented the second straight year of production decreases following a 1.6 percent decline between 1998 and 1999.

Consumption, however, rose by 3 percent between 1999 and 2000, with the additional demand being met from supplier and consumer stocks. About 90 percent of our coal is used for electricity generation as you see depicted in this first chart. You also have copies of these charts with my submitted testimony. The remainder is used in industrial boilers and co-generators, coke plants, and for heating in the building sector. We expect domestic coal demand to increase to 1,297 million short tons in 2020 because of projected growth in coal use for electricity generation, resulting from increased utilization of existing coal-fired generating capacity and expected new coal plants.

Although coal is projected to maintain its fuel cost advantage over other fossil fuels, gas-fired generation is expected to be the most economical choice for construction of new power generating units when capital, operating, and fuel costs are considered.

New natural gas fired-generation has higher efficiencies, lower capital costs, better load following, and shorter construction lead times than coal, and is favored under electricity markets that are undergoing deregulation.

Even though coal plants are expecting to remain competitive and be used more intensively, coal is expected to lose market share in electricity generation as new natural gas-fired plants are added.

Between 2000 and 2020, coal-fired generation is expected to increase about 20 percent, but its share of generation falls to 44 percent. In contrast, gas-fired generation is expected to increase its share from 16 percent today to 36 percent in 2020, as you can see from this chart.

National coal production is expected to increase to 1.3 billion tons by 2020, with the largest gains coming from low sulfur, sub-bituminous mines in the west, especially Wyoming.

Western surface mines are less labor intensive than eastern deep mines, resulting in the industry producing higher quantities of coal from western mines, with fewer miners. The older mining areas in

the east and midwest are projected to show declining projection through 2020, which is depicted in the chart before you.

Due to the increasing productivity, coal mine mouth prices, the price of coal at the point of production, have steadily declined for the past two decades, now costing about \$16.50 per short ton.

Prices are expected to continue falling as productivity continues to improve, although at a slower pace than recently, reaching \$12.70 per ton in 2020 in real 1999 dollars. As you can see from this chart, in nominal dollars, coal prices are relatively flat.

A major challenge to coal is the growing trend toward laws and regulations to reduce emissions associated with its use. These include Phase Two of the Clean Air Act Amendments of 1990, proposals to address ozone formation, fine particulates, regional haze, and mercury; and proposals to reduce carbon dioxide emissions, such as the Kyoto protocol, and multi-pollutant strategies that also reduce sulfur dioxide, nitrogen oxide, and mercury emissions.

In conclusion, while coal provides more than half of today's electricity generation, that share is expected to shrink over the next two decades, as natural gas is expected to greatly increase its proportion of electricity generation.

Nevertheless, under current laws and regulations, coal consumption and production is expected to grow about 1 percent per year between now and 2020.

Thank you, Mr. Chairman, and members of the subcommittee. I will be happy to answer any questions you may have.

[The prepared statement of Mary J. Hutzler follows:]

PREPARED STATEMENT OF MARY J. HUTZLER, ENERGY INFORMATION
ADMINISTRATION, DEPARTMENT OF ENERGY

Mr. Chairman and Members of the Committee: I appreciate the opportunity to appear before you today to discuss current and future coal supply, demand, and prices in the United States.

The Energy Information Administration (EIA) is an autonomous statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data, analysis, and projections for the use of the Department of Energy, other Government agencies, the U.S. Congress, and the public. We do not take positions on policy issues, but we do produce data and analysis reports that are meant to help policy makers determine energy policy. Because we have an element of statutory independence with respect to the analyses that we publish, our views are strictly those of EIA. We do not speak for the Department, nor for any particular point of view with respect to energy policy, and our views should not be construed as representing those of the Department or the Administration. However, EIA's baseline projections on energy trends are widely used by Government agencies, the private sector, and academia for their own energy analyses.

The Committee has requested information about current and future utilization of coal for electricity generation, statutory and regulatory provisions that impact the supply of coal, the prospects for using coal to meet future generation needs, and the role of coal in a comprehensive national energy policy. EIA collects and interprets data on the current energy situation, and produces both short-term and long-term energy projections. The projections in this testimony are from our *Annual Energy Outlook 2001*, released late last year. The *Annual Energy Outlook* provides projections and analysis of domestic energy consumption, supply, and prices through 2020. These projections are not meant to be exact predictions of the future, but represent a likely energy future, given technological and demographic trends, current laws and regulations, and consumer behavior as derived from known data. EIA recognizes that projections of energy markets are highly uncertain and subject to many random events that cannot be foreseen, such as weather, political disruptions, strikes, and technological breakthroughs. In addition, long-term trends in technology development, demographics, economic growth, and energy resources may evolve along a different path than assumed in the *Annual Energy Outlook*. Many of these uncertainties are explored through alternative cases.

EIA also performs special studies at the request of the Department of Energy, the U.S. Congress, and other government agencies. In late 2000, EIA performed an analysis of strategies for reducing multiple emissions at power plants, at the request of then-Representative David M. McIntosh, Chairman, Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs of the Committee on Government Reform. The results of this analysis were published in *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides, and Carbon Dioxide*.¹ This report projects the impact on coal markets of such proposals, and I have included it in my testimony as an illustration of the challenges faced by the coal industry in responding to potential environmental policies. In an upcoming report, we will also provide projected impacts of including a cap on mercury emissions and a national Renewable Portfolio Standard to this analysis, both separately and in fully integrated cases with sulfur dioxide, nitrogen oxides, and carbon dioxide.

THE CURRENT SITUATION

Supply, Demand, and Prices

U.S. coal production, continuing a recent trend, declined by 1.2 percent between 1999 and 2000, to 1,087 million short tons. This represented the second straight year of production decreases, following a 1.6 percent drop between 1998 and 1999. While consumption rose slightly to an estimated 1,078 million short tons, about a 3 percent growth from 1999, more coal was supplied from producer and consumer stocks, reducing the need for an increase in production. On a regional basis, most of the decline in 2000 was in the Interior section of the country, made up primarily of the Illinois Basin, Texas lignite production, and other smaller deposits in the Midwest. Illinois Basin coal, mainly high sulfur, declined 15 million short tons, or almost 15 percent, from 1999 levels as electricity producers demanded more low-sulfur coal to meet the sulfur dioxide caps of Phase II of the Clean Air Act Amendments of 1990. Appalachian coal production declined slightly, as its older mines continued their long-term loss of market share, while Western coal—dominated by low-sulfur subbituminous production in Wyoming's Powder River Basin—continued to increase production, although at a lower rate than in recent years.

Some 978 million short tons, more than 90 percent of the total consumption, were used by the electric power sector to produce almost 52 percent of total electric generation from all energy sources. Coal use for electricity generation grew by 3.3 percent in 2000, more than a percentage point higher than the growth in total generation. Coal use in the non-electric power sector grew about 2 percent in 2000, to just over 100 million tons. While consumption of coking coal used in steel production grew slightly, steam coal use for general industry showed the largest 1-year increase in over a decade. With the vigorous economy fueling industrial demand, and rising natural gas prices, a 3-year decline in industrial usage of coal was reversed.

Coal prices through the end of 2000 continued the downward trend that started in the early 1980s. On a delivered basis, the average utility coal price dropped to \$1.20 per million Btu in 2000, about a 2 percent decline from 1999, or about 4 percent in real (inflation-adjusted) terms. The minemouth price of coal also is estimated to have declined about 4 percent in 2000. Contributing to the decline in prices over the last two decades has been a persistent growth in labor productivity, attributable both to technology improvements such as longwall mining, and to a long-term shift to Western surface mining, which requires far less labor input than the older underground mines of the East. From 1985 through 1998, coal mining productivity improved at an annual average rate of 6.5 percent. This in turn was accompanied by a reduction in coal mining employment from 169,000 to 81,000 workers nationwide, or a decline of 52 percent.

Although coal is the only fuel for which the U.S. is a net exporter, coal exports have fallen precipitously in recent years. From a high of 109 million tons in 1991, exports fell to 59 million tons in both 1999 and 2000. The 2000 level, however, represented at least a temporary halt in the recent decline, which saw annual exports decrease over 30 million tons from 1996 through 1999. Fierce competition from other coal-exporting nations, especially Australia and South Africa, along with a strong U.S. dollar, has greatly reduced U.S. competitiveness in world coal markets, compared to a decade ago. However, U.S. exports still represent about 5 percent of U.S. production.

¹ Energy Information Administration (EIA), *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides, and Carbon Dioxide*, SR/OIAF/2000-05/APPS-2 (Washington, DC, December 2000), <http://www.eia.doe.gov/oiaf/servicerpt/power-plants/index.html>.

Coal is the nation's most abundant fossil fuel resource. The Demonstrated Reserve Base, which is a broad measure of available coal resources, is estimated to be about 500 billion short tons. Of this amount, approximately 275 billion short tons are estimated to be recoverable. As of the end of 1998, about 19.3 billion tons of coal were available for recovery at the nation's active coal mines. The U.S. has the world's largest quantity of ultimately recoverable coal reserves.

Legislative and Regulatory Issues Affecting Coal

While coal is expected to continue to play a major role in meeting increasing U.S. electricity demand, there are a number of challenges the industry must face in light of current and future environmental policy goals. The Clean Air Act Amendments of 1990 and related State regulations have placed increasingly stringent requirements on electricity generators to reduce emissions of sulfur dioxide and nitrogen oxides. These requirements have affected coal-fired generators more than other sources of electricity generation (except for petroleum-based generators) because of the higher levels of these pollutants emitted by coal-fired plants.

The greatest challenge to maintaining or increasing use of this domestic energy resource is regulatory uncertainty regarding future environmental policies, especially those dealing with carbon dioxide. Proposed revisions to address ozone emissions, fine particulates, regional haze, and mercury emissions could necessitate additional control measures for coal electricity generation. Water quality regulations related to cooling water intake structures, and total maximum daily loadings on streams may be expanded. Climate change concerns could affect the future use of coal, given the uncertainty surrounding whether and when the U.S. might require reductions in carbon dioxide emissions. Because coal-based electricity generation emits about 70 percent more carbon dioxide per unit of production than natural gas electricity generation, any effort to control carbon dioxide emissions will almost certainly have an impact on coal power plants, which emit about one-third of U.S. carbon dioxide emissions. Because there are currently no economically viable technologies to eliminate carbon dioxide emissions from coal combustion, power producers may need to turn to alternative sources to meet the nation's increasing need for generating capacity.

One issue currently before the courts regards emissions from a number of existing coal plants. The Department of Justice, on behalf of the U.S. Environmental Protection Agency (EPA), filed lawsuits in November 1999 against seven electric utility companies in the Midwest and South, charging that 17 of the companies' power plants had illegally released significant amounts of pollutants for two decades². At the same time, the EPA issued an administrative order against the Tennessee Valley Authority (TVA), charging the Federal agency with similar violations at another seven power plants. In addition to the lawsuits and administrative order, the EPA issued notices of violation, naming an additional eight plants owned by other utilities as sites of similar violations of the Clean Air Act. The dispute in these lawsuits centers around whether certain modifications or capital improvements performed at the plants named in the action were "major"—specifically, whether the actions were aimed at increasing capacity, regaining lost capacity, or extending the life of the units. Any such major modification, under the provisions of the Act, would trigger the New Source Review permitting process, forcing the plants to adopt technology to meet more stringent SO₂ and NO_x emission standards. At this time one of the suits has been resolved, and pending settlements have been reached with two other companies accused of similar violations. The remaining cases have yet to be resolved. If the result of these and similar future actions is that a large number of older coal-fired power plants will be required to add state-of-the-art emissions control equipment in the near future, some of them may instead choose to retire or repower as natural gas plants, thus reducing overall demand for coal.

Other regulatory issues facing the industry include the status of mountaintop mining, which is a method of surface mining used primarily in West Virginia. This procedure enables the operator to remove the "overburden" covering a coal seam, making the entire deposit more easily available for extraction. Because the removed material must be deposited into adjacent valleys, there is concern that streams and other natural features could be affected by the material, known as "valley fill." In October 1999, the U.S. District Judge for the Southern District of West Virginia issued a ruling that had the effect of eliminating the issuance of surface coal mining permits for certain projects in West Virginia using mountaintop mining methods. The order has currently been stayed pending appeal. The 4th Circuit Court of Appeals heard the case on December 7, 2000. A decision is expected to be made be-

²In December 1999 a similar suit was also filed against Duke Power.

tween three to six months from that date. Future projects in Appalachia could be adversely impacted depending upon the final outcome of the case.

Finally, the Department of Labor has issued regulations which would have the effect of increasing eligibility for medical claims arising from Black Lung Disease, an occupational hazard of coal mining. The new regulations were effective on January 19, 2001. However, in response to a challenge from the National Mining Association (NMA) and others, the U.S. District Court for the District of Columbia issued an injunction on February 9, 2001, suspending many sections of the new rules. Oral arguments on the NMA lawsuit are scheduled for May 21, 2001. If approved, these rules could raise insurance rates for mining companies, as well as the excise tax supporting the Black Lung Disability Trust Fund, currently set at \$0.55 per ton of surface-mined coal and \$1.10 per ton of underground-mined coal. The industry has stated that the regulations could have a severe impact on profitability, especially for smaller operators, while miners have argued that too small a proportion of medical claims related to the condition are currently being approved.

Although each of these issues is important to the future of the coal industry, they are far less likely to have a major impact than would the possible imposition of carbon dioxide limits on power plants. Because there is no commercially-viable technology for reducing or eliminating carbon dioxide emissions from the production of electricity, the only plausible alternatives are to improve efficiency, switch to lower-emitting sources such as natural gas, nuclear, or renewables, or reduce electricity production. All of these options imply lower coal consumption and, consequently, production.

THE OUTLOOK

The *Annual Energy Outlook 2001* (AEO2001) reference case projects U.S. energy supply, demand, and prices through 2020. It assumes a continuation of current laws and regulations, but does not include in its reference case the impacts of proposed policies such as the Kyoto Protocol provision for reduced carbon dioxide emissions or multi-emission reductions from power plants. The following summarizes the reference case outlook for coal markets, then discusses how those results might change under a multi-pollutant strategy.

Annual Energy Outlook 2001

Coal is projected to continue to play a major role in meeting electricity generation requirements through 2020 under the assumptions of the AEO2001 reference case. Total purchased electricity consumption is projected to increase at an annual average rate of 1.8 percent between now and 2020, reaching 4804 billion kilowatt-hours (bkwh) (Figure 1). In order to meet this demand, electricity producers and cogenerators will need to increase total generation to 5294 bkwh by 2020, after accounting for on-site consumption by cogenerators and transmission and distribution losses. Of this total, coal-fired generation is expected to contribute 2350 bkwh, or 44 percent of the total (Figure 2). While this represents continued growth in coal-based generation, it also indicates a decline from the share (52 percent) of generation provided by coal-fired capacity in 2000. The decreased share of generation from coal is expected to be made up mainly by increased use of natural gas, which is expected to increase its share of total generation from 16 percent in 2000 to 36 percent by 2020. Despite the higher fuel cost, natural gas is expected to make inroads in the electricity generation sector due to lower capital costs for new natural gas generating capacity, shorter construction lead times, easier permitting and siting of such plants, higher efficiencies than coal-based plants, and lower sulfur dioxide and nitrogen oxide emissions, helping to meet the requirements of the Clean Air Act Amendments of 1990. While coal-fired capacity is currently at 312 gigawatts, about 40 percent of the nation's generating capacity, only about 22 gigawatts are expected to be added through 2020, with 15 gigawatts of today's capacity retiring by that time. Thus, by 2020 coal-fired capacity is expected to make up just 28 percent of total generating capacity, with natural gas-fired combined cycle and combustion turbine units accounting for most of the needed growth (Figure 3). Figure 4 illustrates the kilowatt-hour cost comparisons between new coal- and natural gas-fired generating capacity in 2005 and 2020, showing the advantage expected for natural gas-fired combined cycle capacity to meet future electricity needs.

In order for coal to meet the increasing demand for electricity, production will need to grow at an average annual rate of 0.9 percent through 2020, with total production reaching 1331 million short tons. All of the growth in production, however, is expected to come from Western mines, which are expected to increase their production from 518 million short tons in 2000 to 787 million short tons by 2020, a 2.1 percent annual growth rate. Production in the older mines of Appalachia is projected to decline from the 2000 level of 422 million short tons to 392 million short

tons by 2020, while Interior production will remain about the same (Figure 5). Western coal is dominated by the low-sulfur, surface-mined production of Wyoming's Powder River Basin, which in just a couple of decades has become the leading source of U.S. coal, both because of its low cost and low sulfur content. Production in the Interior region tends toward high-sulfur coal, which is less valuable due to the provisions of the Clean Air Act Amendments of 1990. While Appalachia has both low- and high-sulfur coal deposits, mining costs are higher because most of the mines are underground, and the lowest-cost reserves have already been mined.

As additional quantities of coal are produced, current reserves of coal at active mines will decline. Active mines' coal reserves at the end of 1998 totaled about 19.3 billion tons, roughly 19 years' worth of reserves at today's production levels. By 2020, only about 2 billion tons of today's reserves would remain, necessitating major investment in the industry to expand reserves at existing mines or open new mining capacity (Figure 6). This is particularly true of the East, where virtually all of today's reserves must be replaced in order for the industry to operate at projected levels of production. In the West, mine operators are maintaining a higher reserve-to-production ratio, since a large proportion of overall reserves is closer to the surface and thus cheaper to acquire than the older underground reserves in the East. The Demonstrated Reserve Base for coal—roughly equivalent to the discovered resource base—totals more than 500 billion tons of coal, by far the largest of the fossil fuel resource bases in the U.S., and the largest coal resource base of any country in the world.

The increasing demand for electricity generation is the key driver that affects coal consumption. Consumption by the electricity sector is expected to increase from 964 million short tons in 2000 to 1186 million short tons in 2020, a 1.0 percent annual average growth rate, about half the growth rate of the last decade. Both a lower rate of growth in electricity demand, and a shift to natural gas-fired generation, account for the lower expected growth in coal consumption by electricity producers over the next 20 years. Non-electric consumption is expected to remain about the same, at about 110 million short tons, in 2020, as the long-term decline in metallurgical coal consumption used in the production of steel is offset by slight growth of steam coal for use in general industry (Figure 7).

Minemouth coal prices declined by \$6.45 per ton (in 1999 dollars) between 1970 and 2000, and they are projected to decline by 1.2 percent per year, to \$12.70 per short ton, by 2020 (Figure 8). Both productivity improvements—which are expected to continue but at a lower rate throughout the forecast horizon (Figure 9)—and the long-term shift to lower-cost Western coal, contribute to the continued decline in minemouth prices. Delivered prices to electricity generators are expected to decline, but at a somewhat lower rate. From an estimated \$24.16 per short ton (real 1999 dollars) in 2000, prices are expected to decline to \$19.45 a short ton by 2020, an annual average decrease of 1.1 percent. While minemouth prices fall at a faster rate, higher transportation costs associated with long shipments of greater quantities of Powder River Basin coal are expected to partially offset the lower cost of coal at the mines. There has been some recent reversal of this trend in spot coal markets over the past six months, with coal prices delivered to utilities up by as much as a third in some areas; but we believe prices will resume their decline in the longer term, as prices of competing energy sources, especially natural gas, return to their long-run equilibrium levels.

Coal exports, once a growing share of production, have declined over the past decade, and are expected to continue to erode through 2020, although at a lower rate. From a 2000 level of about 59 million short tons, U.S. exports are expected to decline to 56 million short tons by 2020. Continuing competition from Australia and South Africa, new competition from Colombia, Indonesia, and China, and a reduction in coal demand in our traditional European markets, mitigate against growth in coal exports over the next two decades.

Analysis of Multi-Pollution Strategies

In its recent Service Report for the House Government Reform Committee, EIA analyzed the impact of various policies to reduce multiple emissions at power plants, concentrating on emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon dioxide (CO₂). While a number of congressional bills have been introduced with varying levels and timing of emission reductions, EIA was asked to provide analysis of proposals to reduce SO₂ and NO_x by 75 percent from 1997 levels, and CO₂ to either 1990 levels or 7 percent below 1990 levels, similar to the general requirements of the Kyoto protocol, but restricted to emissions by electric generators. It was assumed that a cap-and-trade system similar to that developed for SO₂ under the Clean Air Act Amendments of 1990 would be used for each pollutant. The main points of the analysis were as follows:

- When emissions caps are examined for each emission individually, power companies are projected to invest primarily in emission control equipment to comply with the NO_x and SO₂ caps; however, to comply with the CO₂ cap they are expected to shift dramatically away from coal to natural gas and, to a lesser extent, renewables.
- The stringency of the emission targets influences the projected impact on electricity and natural gas prices.
- The impacts of meeting the NO_x and SO₂ caps are not projected to have a large effect on electricity prices—generally 1 percent or so above the prices expected in the reference case.
- The projected price impacts of meeting the CO₂ cap are much larger than those of meeting the NO_x and SO₂ caps, as much as 25 percent over reference case electricity prices.
- The CO₂ allowance prices (expressed in dollars per metric ton carbon equivalent) projected in this analysis are generally lower than those projected in comparable studies of efforts to meet the target from the Kyoto Protocol over the whole economy rather than just in the power sector.
- When emissions caps are examined together, actions taken to meet the CO₂ cap are expected to overshadow those taken to reduce NO_x and SO₂ emissions.
- Using an integrated approach—setting caps on power sector NO_x, SO₂, and CO₂ emissions at the same time—is projected to lead to somewhat lower total costs than addressing each emission one at a time.
- If existing coal plants are required to add emission control equipment, NO_x and SO₂ emissions would be dramatically reduced.
- There is considerable uncertainty about whether the changes projected in this analysis could be accomplished in the relatively short time periods assumed—particularly to meet 2005 CO₂ emission targets. The increased production required from the U.S. natural gas industry could be especially difficult to attain in this time frame.

CONCLUSION

While coal provides more than half of today's electricity generation in the U.S., that share is expected to shrink over the next two decades as natural gas is expected to greatly increase its proportion of electricity generation. Nevertheless, under current laws and regulations, coal consumption and production would continue to grow about 1 percent per year between now and 2020.

The major challenge to coal is the growing trend toward laws and regulations to reduce or eliminate emissions associated with its use. These include Phase II of the Clean Air Act Amendments of 1990, proposals to reduce carbon dioxide emissions similar to the requirements of the Kyoto Protocol, "multi-pollutant" strategies that further reduce sulfur dioxide and nitrogen oxide emissions and add new restrictions on mercury and carbon dioxide, and emission control technology retrofits that could be required if current lawsuits alleging violations of the Clean Air Act's New Source Review provisions against a number of coal-fired generating plants are successful. Coal also faces significant competition from natural gas as a fuel source for generation due to its higher efficiency, lower capital cost, and lower construction lead times, which makes it more attractive in competitive electricity markets. Of these challenges, by far the greatest is the potential for reductions in carbon dioxide emissions.

Thank you, Mr. Chairman and members of the Subcommittee. I will be happy to answer any questions you may have.

Figure 1. Annual Electricity Sales by Sector, 1970-2020
(billion kilowatthours)

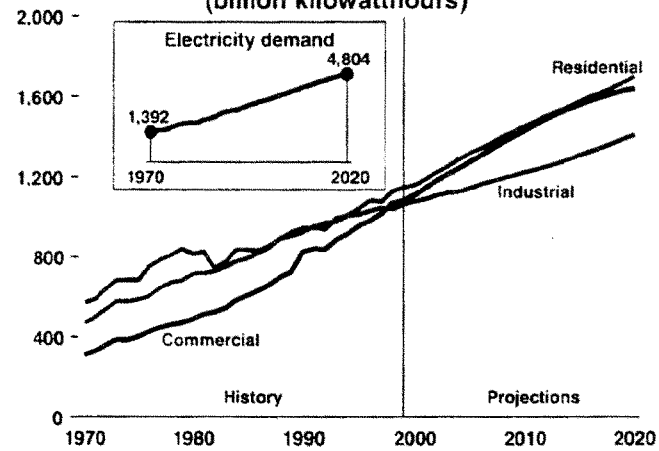


Figure 2. Projected Electricity Generation by Fuel,
1999 and 2020 (billion kilowatthours)

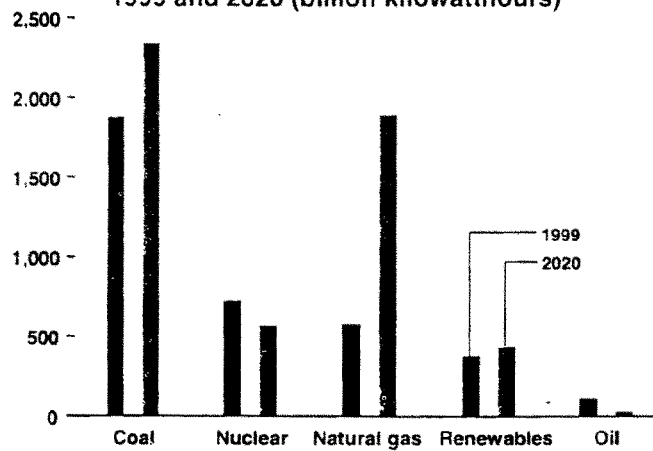


Figure 3. Projected Electricity Generation Capacity Additions by Fuel Type, Including Cogeneration, 2000-2020 (gigawatts)

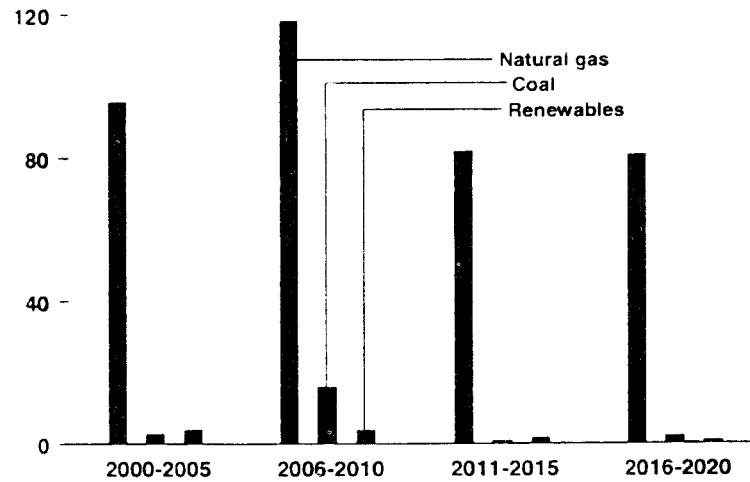


Figure 4. Projected Electricity Generation Costs for New Capacity (1999 mills per kilowatthour)

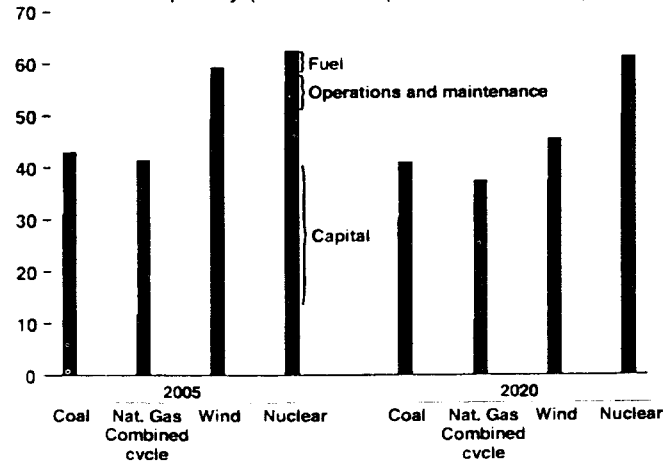


Figure 5. Coal Production by Region, 1970-2020
(million short tons)

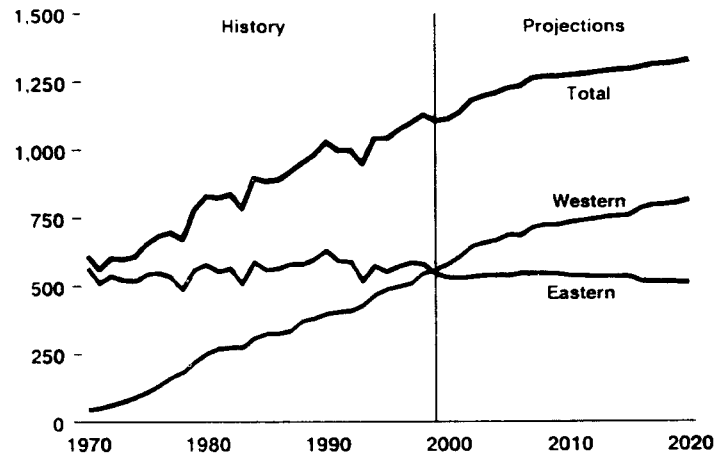


Figure 6. Remaining Coal Reserves at Active Mines,
1997-2020 (million short tons at End of Year)

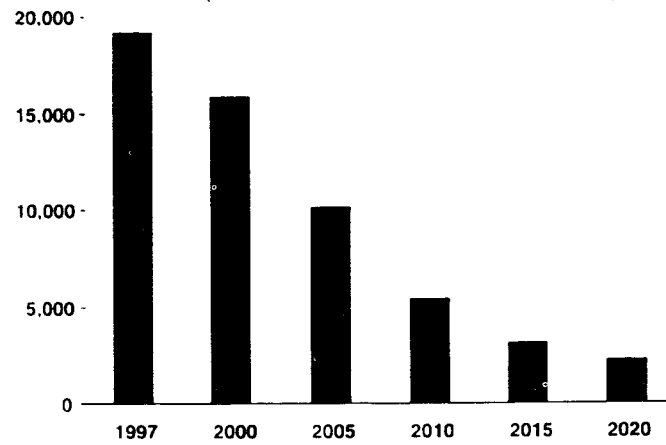


Figure 7. Electricity and Other Coal Consumption, 1970-2020
(million short tons)

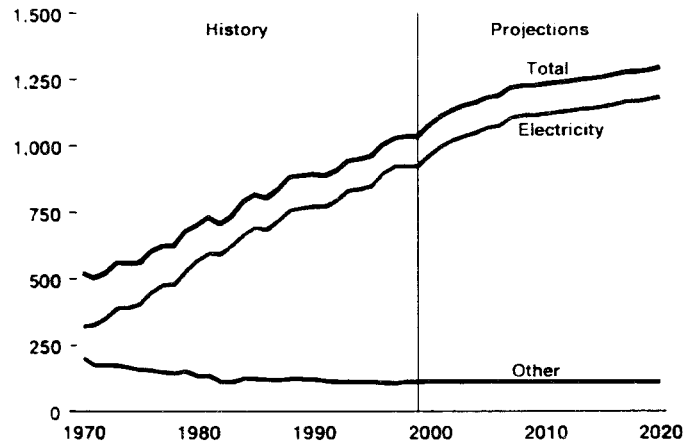


Figure 8. Coal Minemouth Prices, 1970-2020
(1999 dollars per ton)

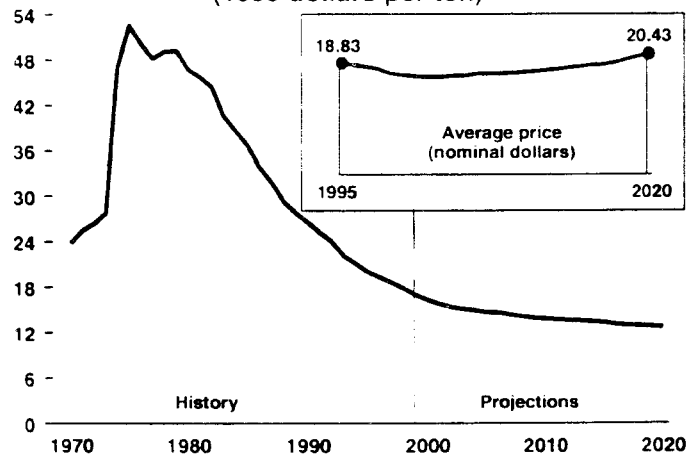
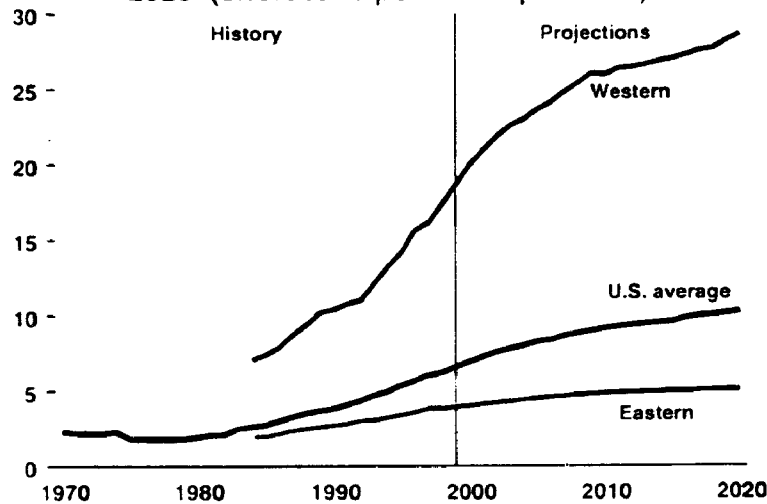


Figure 9. Coal Mining Labor Productivity by Region, 1970-2020 (short tons per miner per hour)



Mr. BARTON. Thank you, Ms. Hutzler, we appreciate your attendance.

We want to welcome Mr. Richard Abdoo, who is Chairman, President, and CEO, of Wisconsin Energy Corporation. And I believe that Congressman Barrett wishes to give him a little bit more of a formal introduction.

Mr. BARRETT. Well, I am just happy that he is here, and he has done an excellent job in really working with consumer groups, and other energy groups, and Wisconsin is in a unique geographic location, and has some unique energy needs, and he has been very creative in trying to meet them, and I am very pleased, Dick, that you are here today.

Mr. ABDOO. Thanks, Tom.

**STATEMENT OF RICHARD A. ABDOO, CHAIRMAN, PRESIDENT
AND CEO, WISCONSIN ENERGY CORPORATION**

Mr. ABDOO. Mr. Chairman and members of the subcommittee, good afternoon. I am Richard A. Abdoo, Chairman, President, and Chief Executive Officer of Wisconsin Energy Corporation, a Milwaukee-based holding company with subsidiaries in the utility and non-utility businesses.

In our utility operations, our companies serve more than 1 million electric and nearly 1 million natural gas customers in Wisconsin and Michigan's Upper Peninsula. And I am really pleased to appear today to testify on energy issues and the role that coal-based electric generation has in a national energy policy.

I also commend the chairman and the subcommittee for holding these hearings on this extremely important subject. The time has arrived for a coherent, cohesive, and comprehensive national energy policy to allow the electric industry to achieve improved reliability, greater reserves, and more stable prices.

In my view, a national energy policy concerning power generation should be based on four principles. First, it should balance our need for a strong economy, a clean environment, and stability in the electricity prices. Overemphasizing one would shortchange another. We need approaches that recognize the importance of all three.

Second, America needs fuel diversity in generating power to ensure flexibility in meeting future energy needs. Flexibility through diversity allows us to meet electricity demand in a way that enhances the economy and the environment.

A diverse fuel mix should include coal, nuclear, natural gas, renewables, and hydro. Conservation also is part of a diverse approach to balance the economy and the environment. Such diversity helps protect consumers from fuel shortages and price volatility that occur when one fuel dominates the mix.

Third, we need a commitment to long term solutions for expanding energy supply. Short term fixes simply cause chaos in the infrastructure industries. In recent years, we have seen the impact of relying almost exclusively on natural gas based plants for new generation: tight gas supply, higher prices, and backlogged projects for natural gas based plants. We need solutions that preserve coal-based generation as an option.

Fourth, our national energy policy should take advantage of energy resources available in the U.S. One of the most plentiful is coal. This valuable, but under-utilized asset, can help meet the Nation's projected energy needs for more than 250 years.

In the recent past natural gas has become the fuel of choice for new power plants. The primary reason is that natural gas, like nuclear, has little environmental impact. As environmental restrictions grew more stringent, coal fell out of favor and natural gas became the fuel of choice.

But it is hard to keep a good fuel down, and because of new technology, coal already has staged a comeback in Asia and Europe, and now Wisconsin Energy is poised to launch coal's return to prominence in America.

We have proposed construction of three 600 megawatt coal-based plants as part of our power of the future plan. We are committed to using the latest technology to reduce emissions of nitrogen oxide, sulfur dioxide, mercury, and carbon dioxide, while gaining higher efficiency and lower costs.

Our plan also includes two natural gas based units, and a significant investment in renewables and conservation. But electricity from coal is the most prominent feature of our approach for a sustainable and affordable power supply in the great State of Wisconsin.

Modern coal-based plants generate electricity with dramatically less environmental impact than the coal plants built a generation ago. The new generation of plants already in use in other parts of the world demonstrate the emissions reductions for sulfur dioxide and nitrogen oxide, placing them well within current environmental regulations.

Further, clean coal technology reduces greenhouse gases, primarily through more efficient combustion. Use of this technology is

a clear example of how economic and environmental goals can be met.

Those of us in the power industry and those of you in government must share a commitment to advance technology and policy-making that secures America's power supply.

As a Nation, we must work together to identify and remove the obstacles that block us from achieving our goal. We must develop a coordinated approach to environmental and energy regulation, and we must keep options open for all fuel sources, especially coal, the dark mineral that offers a light for our energy future.

Thank you for your attention to this vital concern, and for your support in pursuing a long term national energy policy that improves our ability to grow our power supply. In summary, you asked about incentives that I would respectfully suggest for your consideration to further the development of coal.

I recall about 30 years ago, 25 years ago, that we had an investment tax credit program, and a trace out program, and I believe it was enacted in 1974. That would help because of the higher capital costs associated with coal.

A new coal plant, about half of it is for the generating part, and half of the capital investment is for environmental protection. We can streamline the regulations so that we sort of get one-stop shopping, and can get on with a yes or no answer.

Second, I would ask you to remember the big three Es. We need energy. We need an economy, and we need a clean environment, and those three are inextricably linked. The economy grows, and we have an impact on energy, and an impact on the environment.

If energy grows, we impact the environment and the economy. And finally, and respectfully, but vigorously, please focus on the long-term nature of the problem. Getting distracted by the current problem of the day, or crisis of the day, whether it is California or the article that appeared in the Post today about the President, just distracts from what we need to do.

We need a long-term strategy to power the U.S. economy and environment into the future. You can do it. I have great confidence in you, and please stick to the task. It is not easy, but we desperately need a policy. Thank you.

[The prepared statement of Richard A. Abdoo follows:]

PREPARED STATEMENT OF RICHARD A. ABDOO, CHAIRMAN, PRESIDENT AND CEO,
WISCONSIN ENERGY

Mr. Chairman and Members of the Subcommittee: Good afternoon. I am Richard A. Abdoo, chairman, president and chief executive officer of Wisconsin Energy Corporation, a Milwaukee-based holding company with subsidiaries in utility and non-utility businesses. The company serves more than one million electric and more than 950,000 natural gas customers in Wisconsin and Michigan's Upper Peninsula through its primary utility subsidiaries Wisconsin Electric, Wisconsin Gas and Edison Sault Electric. Its non-utility subsidiaries include energy services and development, pump manufacturing, waste-to-energy, and real estate businesses.

I am pleased to appear before you to testify on coal issues and the role coal-based generation has in a national energy policy. I also commend the chairman and the subcommittee for holding these hearings on this important subject.

The time has arrived for a coherent, cohesive and comprehensive national energy policy to allow the electric industry to achieve improved reliability, greater reserves and more stable prices. In my view, energy policy concerning power generation should be based on four principles:

- A balance of economic, environmental and energy supply goals.

- A need for fuel diversity.
- A commitment to long-term solutions.
- An emphasis on domestic resources—particularly coal.

The fourth principle is the basis for most of my testimony because one of our most abundant domestic resources is coal—the subject of today’s hearing. Part of my testimony will focus on the environmental aspects of coal-based generation, the most controversial consideration in more fully tapping this valuable resource.

THE U.S. POWER SUPPLY PROBLEM

The major reasons the United States faces a power supply dilemma is its aging electric infrastructure and a changing environment that hampers development of new sources of generation. Like highways, bridges, airports, pipelines and other infrastructure, many power plants are growing old. Many will be retired in the next two decades. Some will be nuclear, but most of it will be coal-based.

Solutions exist, but time is short. We stand at a crossroads for meeting our nation’s future energy needs. We could continue on our present path—relying almost exclusively on natural-gas-fired power plants to meet growing demand—or we can take a diversified approach—pursuing a variety of energy sources to power our nation. Our current, natural-gas-dependent path contains potholes of high prices and uncertain supply. A smoother route includes not only natural gas but also sources such as uranium, wind, water and the backbone of our nation’s power supply—coal, which provides more than half of America’s power today.

Despite its historic prominence, coal was neglected as fuel for new plants over the past decade, primarily for environmental reasons. But new developments give this dark-colored mineral a bright future in restoring balance for future power supply.

Today, I will discuss key principles for power generation in a national energy policy, and coal’s important role in meeting current and future energy needs. In particular, I will focus on Wisconsin Energy’s Power the Future plan, which has electricity from coal as a centerpiece in addressing the growing demand of our customers.

POWER GENERATION PRINCIPLES IN A NATIONAL ENERGY POLICY

1. Balancing Economy, Environment and Energy Supply

The first and most important principle for a national energy policy is an approach that balances the economy, the environment and the energy we need. Because all three are important, coordination is needed to ensure that all three remain strong and improve together at roughly the same pace. If one receives primary consideration, it may come at the detriment of one of the others.

For example, environmental considerations are driving demand for natural-gas-fired power plant projects. But if we replace existing coal-based and nuclear capacity with more gas or renewable projects, we jeopardize reliability and increase costs. On the other hand, if economics is the most important consideration in the future, environmental quality could be compromised.

Nobody wants to see the environment do anything but improve, and nobody wants to see the economy do anything but grow stronger. A balanced approach can contribute to both while maintaining energy supply reliability. As we have seen with natural-gas-fired generation, single-source solutions add cost, diminish national security and hamper reliability.

2. Emphasizing Fuel Diversity

The second principle emphasizes the need for fuel diversity. We need electricity from coal and nuclear in the mix along with natural gas, hydroelectric power and renewables to ensure flexibility in meeting future energy needs—meeting them in ways that enhance the economy without degrading the environment. A diverse fuel mix helps protect companies and consumers from impacts of fuel shortages, price fluctuations and regulatory changes. Diverse fuel and technology options contribute to a stable, reliable and affordable energy supply over the long term.

3. Committing to Long-term Solutions

The third principle is a commitment to long-term solutions to grow the nation’s energy supply. Short-term solutions skew the focus and cause imbalance that disrupts a healthy mix of power supply sources.

For example, almost every new generating plant being built in the United States is fueled by natural gas. The focus on gas is a short-term response to meeting supply shortages in an environmentally acceptable way. Because of the perceived ability to get natural-gas units up and running quickly (as well as the perceived environmental advantages), our country is relying on them as the *sole* solution. But gas

equipment orders have soared, which strains equipment suppliers and raises questions about gas supply and delivery. Such short-term approaches are an invitation for long-term trouble.

A long-term solution requires coordinated generation planning among utility and non-utility generators that emphasizes a mix of sources. It also requires a means to relieve constraints or at least minimize uncertainties associated with building new plants. We're in a position today where we have a clear need for supply and an environmentally acceptable means to provide it—but constraints that prevent us from building it when it is needed the most.

Most of the constraints we face are rooted in a general disdain for power plants of any kind—especially when it comes to siting issues. Nobody wants them in their neighborhood. Given such an atmosphere, long-term solutions to the nation's future energy needs must consider the difficulty that exists in siting power plants and related infrastructure for power delivery.

4. *Taking Advantage of Coal and Other Domestic Resources*

The need for a long-term energy supply solution leads directly into the fourth principle. We need a national energy policy that takes advantage of energy resources available within our country. One of the most plentiful energy resources is coal. More than 90 percent of U.S. coal usage is for generating electricity. This valuable but underutilized asset can meet the nation's energy needs for about 250 to 350 years. Nuclear power also is a plentiful resource with a virtually unlimited supply potential. On the other hand, the known supply of natural gas reserves looks adequate only for 40 years, based on current consumption. And when you consider the multiple uses for natural gas, especially for heating, it's reasonable to question its use for generating substantial amounts of power when electricity from coal is available to do the same work.

We have seen dramatic increases in natural gas prices just this past year. Projections suggest the cost will continue at high levels in the near term. Over the next 15 years, gas consumption is expected to rise by nearly 10 trillion cubic feet. For gas to remain a cost-effective, *long-term* option, the nation will soon need to face the issue of opening more areas to exploration.

Best estimates show future natural gas prices settling in the \$4 to \$5 range per million Btu if all available supplies are tapped. If not, higher prices can be expected, which makes other energy sources even more cost effective. Coal-based capacity additions, which already look attractive, will look even better as technology drives down their costs.

CLEAN COAL TECHNOLOGY

As the nation's electricity reserve margins continue to decrease—from highs of 26 percent to lows of 11 percent just in the past decade—we must take a new look at coal in a renewed role of prominence in the United States energy mix. The combination of this old source of energy and new technology is an important part of the solution to meeting America's energy needs, which are projected to grow 34 percent by 2020.

New technology puts coal-based plants in position to clear today's environmental hurdles. Although Germany and Japan have built generating plants using clean coal technology in the past decade, no such plants have yet been built in the United States—other than subsidized or demonstration projects.

Modern coal-based plants generate electricity with dramatically less environmental impact than traditional coal-based plants. The lower emissions and higher efficiency of new coal-based plants go beyond current environmental requirements for sulfur dioxide and nitrogen oxide. Clean coal technology also addresses greenhouse gases. Because of increased efficiency, new technology coal plants produce significantly less carbon dioxide per megawatt-hour than old plants. The units that we propose to build likely would result in a 30 percent reduction in the fuel needed to generate the same amount of electricity. In other words, the fuel once used to power three homes would power four. Consequently, the fourth home would be powered with virtually zero environmental impact, and the other homes would be served with less environmental impact than before.

Several types of clean coal technology are available. Among the most prominent are:

- **Supercritical Pulverized Coal Plants** that boost efficiency by operating at higher pressures and temperatures. They also use state-of-the-art equipment for nitrogen oxide and sulfur dioxide emissions control.
- **Integrated Gasification Combined Cycle Plants** that use a combination of chemical processes and a variety of fuels to create a gas fuel cleansed of sulfur

and mercury. These plants also employ selective catalytic reduction to reduce nitrogen oxide emissions; the thermal efficiency also minimizes carbon dioxide emissions.

- **Pressurized Fluid Bed Combustion Plants** that capture sulfur dioxide and reduce nitrogen oxide emissions through a combustion process at elevated pressures and remove particulate emissions with mechanical devices.

Such technologies and others make coal-based generation viable from both an environmental and efficiency perspective.

WISCONSIN ENERGY'S POWER THE FUTURE PLAN

Wisconsin Energy made a decision in 1999—before natural gas prices jumped and California's misery began—to shape its future direction and better serve customers' needs by pursuing a reliable energy future rather than a deregulated one. We believe it makes sense to build first and deregulate later.

In Wisconsin, not a single base-load plant has been built since the mid-1980s. Nearly all of the generation built recently has been fired by natural gas. Typically, these plants are less expensive to build, easier to site and environmentally friendly. But these plants are costly to run—extremely costly when natural gas prices are as high as they have been in recent months. Consequently, they are used primarily during short periods of peak demand. Such plants do not provide a viable long-term solution.

Wisconsin Energy announced its Power the Future plan last year to address the power supply situation in Wisconsin in a way that uses the diversified fuel approach we advocate for the entire nation. Our plan puts coal technology prominently back in the picture for new capacity.

We see Wisconsin's electricity demand growing by almost 3 percent per year. By 2010, we conservatively estimate a statewide power deficit of 4,000 megawatts. Our situation is even more dire when you consider the age of the state's plants. The majority of the state's base-load coal plants are more than 40 years old. Though they probably should be retired sometime soon, load growth makes it nearly impossible to do so. Like the rest of the country, nearly all of the generation built in Wisconsin in the 1990s was gas-fired, and another 2,300 megawatts planned in Wisconsin between this year and 2003 also are gas-fired.

Our state's aging fleet of base load plants, rising demand fueled by a strong economy, and increasing use of air conditioning and electronic devices prompted our Power the Future plan. To ensure reliable, affordable and quality electric energy supplies in Wisconsin, we propose an aggressive program to build 2,800 megawatts of new generation in the state over the next decade.

Our plan envisions construction of three 600-megawatt coal-based units at our existing power plant site in Oak Creek, and two 500-megawatt combined-cycle natural-gas-fired units—one (and maybe both) at our Port Washington Power Plant site. The total cost of this program through 2011 is estimated at \$3 billion. This does not count a \$1.3 billion investment to improve our existing plants.

As part of this plan, we will retire older, less efficient coal-based units—some in the next two to four years and others 10 to 20 years from now. We also will significantly increase our use of renewable energy sources. The impact on prices for customers is expected to be about the same as the rate of inflation. If we don't build, costs will increase faster and reliability will be less certain as we face the higher costs and uncertainties of the power markets. Demand also will necessitate operation of units we would prefer to retire.

We propose coal and natural gas for these new units because a fuel mix enhances long-term price stability. With natural gas at \$4 per million Btu and coal at \$1 per million Btu, coal has an economic advantage—especially at higher capacity factors. In fact, our projections indicate savings of more than \$1.6 billion for our customers over a 25-year period when compared with exclusively relying on gas-fired capacity additions.

Power the Future complements Wisconsin Energy's balanced approach to serve its customers—a blend of conservation and energy efficiency measures along with continued emphasis on diversified generating sources. While a mix of coal, nuclear, natural gas, hydroelectric and renewables offers the best long-term stability for energy prices, it also offers environmental benefits. Re-powering our oldest coal-based power plant in Port Washington with a high-efficiency gas-fired unit will, of course, reduce emissions. But equally as important, the high-efficiency coal-based units planned at Oak Creek will incorporate the latest proven emissions technology from the United States, Germany and Japan. This means that overall emissions will go down, and energy output will go up. Though we have not yet determined the technologies we will use, we are considering the clean coal technologies I've already de-

scribed: advanced pulverized coal, coal gasification and fluidized bed combustion. In addition, we plan to spend about \$10 million for carbon dioxide mitigation.

Our interest in taking a leadership role in commercial application of clean coal technology continues our company's tradition of strong environmental performance and commitment to state-of-the-art emissions technology for new construction.

Wisconsin Energy's commitment to the environment is strong, and we have a long history of working successfully with regulators and other organizations on environmental initiatives. Last year, our Wisconsin Electric subsidiary and the Wisconsin Department of Natural Resources filed a proposal under the Environmental Protection Agency's Project XL. Project XL stands for "eXcellence and Leadership," targeting innovative ways to achieve superior environmental performance. Our proposal, which is the first of its kind for the electric industry, is designed to reduce nitrogen oxide emissions by 65 to 70 percent, sulfur dioxide by 35 to 40 percent and mercury by 40 percent over the next 10 years. Our Power the Future proposal enhances such environmental initiatives because of the clean coal technology we plan for our new facilities and the planned retirement of our oldest plants.

Wisconsin Energy's comprehensive approach provides an excellent example of how environmental and economic goals can be met at the same time. Though some say it is time to deregulate the electric industry and introduce retail competition in Wisconsin, we believe we need to focus on the needs of customers first. Reliability is our number one priority. We need a concerted effort to strengthen our supply and infrastructure before discussing any significant regulatory changes to make the industry more competitive in Wisconsin. That's where Power the Future comes in. Nobody disagrees with the need for the additional power. We believe we have the right plan at the right time to lead to breakthroughs rather than breakdowns for Wisconsin's energy future.

Power the Future is gaining the support of a growing number of investor-owned utilities, cooperative and municipal utilities, labor, employees, financial analysts, elected officials and consumer groups who understand the benefits of our 10-year plan. We believe the economic health of Wisconsin hangs in the balance and await an endorsement of our plan by the Public Service Commission of Wisconsin. The commission must approve the financial arrangements. Our plan includes the formation of a non-utility subsidiary to finance, build and own the plants. The new subsidiary would then lease the plants for 20 to 25 years to our utility, which would operate the plants. The commission also would approve plant construction plans.

We expect the commission to issue a decision on our basic concept in a month or two. If the commission agrees with the concept, we will file detailed plans for regulatory analysis later this year. If progress continues as planned, the capacity additions would be added to our system beginning in 2005. When all the new plants are completed in 2011, our percentage of electricity from coal in our capacity mix would be about the same as it is today—around 50 percent.

POWERING THE NATION'S FUTURE

Our work is cut out for us. Our nation's electricity supply margin is dwindling, new projects are few, transmission is pushed to its limit, existing plants are aging and restrictions on siting and construction are increasing. This combination has put our nation's energy supply and economy at risk. While uncertainty and constraints make it tougher to add supply, growth continues at a steady rate of 2 to 3 percent per year and much more in some places. The warning signs are in front of us and more are appearing each day.

While our Power the Future plan aims to help solve Wisconsin's future energy needs, we also believe that our leadership in placing the latest coal technology into commercial operation can help chart a new path for the rest of the nation. The United States and other leading nations have a responsibility to develop and model new technology for the rest of the world to produce more cost-effective, efficient and cleaner energy sources.

Those of us in the power industry and those of you in government must share a commitment to advance technology and policy-making that secures America's power supply. As a nation, we must work together to identify and remove the obstacles that block us from achieving our goal. We must develop a coordinated approach to environmental and energy regulation. And we must keep options open for all fuel sources, especially coal—the dark mineral that offers a light for our energy future.

We don't have much time. Waiting won't give us any more. As we learn to use coal in more environmentally friendly ways, we need to give it a more prominent place in America's energy future. Thank you for your attention to this vital concern and for your support in pursuing a *long-term* national energy policy that improves our ability to grow our power supply and elevates the role of coal.

Mr. BARTON. Thank you, and we had not thought of a long-term energy policy until you just said it. So, we are so glad to get that on the record. We appreciate that. You are exactly right. I should not make fun of what you said. You are exactly right, and we intend to do that on a bipartisan basis.

We want to welcome Mr. Brett Harvey, who is CEO and President of CONSOL Energy, Incorporated, in Pittsburgh.

I have had the pleasure of having lunch with you, sir, and I believe Congressman Doyle wishes to give you a more formal introduction to the subcommittee.

Mr. DOYLE. Well, thank you, Mr. Chairman. We all on the subcommittee are pleased to welcome J. Brett Harvey, a fellow Pittsburgher. In addition to being President and CEO of CONSOL Energy, I want to tell you a little bit about Mr. Harvey.

He was President and CEO of Pacific Corp Energy and began his business career in 1979 with Kaiser Steel Company as a long law supervisor, and quickly rose to the position of Vice President and General Manager.

He went on to join Utah Power and Light Company, and served in the capacity of Vice President of Fields of Mining. Mr. Harvey is a member of the Board of Directors of the National Mining Association, the World Coal Institute Executive Committee, and the National Mining Hall of Fame and Museum.

Mr. Harvey, welcome to the subcommittee.

STATEMENT OF J. BRETT HARVEY, PRESIDENT AND CEO, CONSOL ENERGY, INCORPORATED

Mr. HARVEY. Thank you, Mr. Doyle, and thank you, Mr. Chairman. CONSOL Energy is the Nation's largest producer of underground coal, and I am here today on behalf of the National Mining Association representing the producers of over 80 percent of the coal mined in the U.S. today.

Thank you for holding these hearings on our need for a real national energy policy. As we all know, available, affordable energy underlies the economic prosperity of our country. Recent problems of high prices of natural gas, and the problems of lack of energy in the west have occurred because of the demand for energy has outstripped the supply.

The demand for energy, especially for electricity, will continue to increase. But government policies have discouraged, if not outright prevented, investment in the energy infrastructure needed to meet these new demands. We need to focus on a strategy that supports the expansion of domestic energy, whether it is coal, natural gas, petroleum, uranium, or renewable energy.

Coal is the largest domestic fuel source in the United States. Between 90 and 95 percent of all of our fossil fuel is coal. One-third of our domestic production of energy is coal at this point in time. Our industry produces over 1.1 billion tons of coal per year, and more than 90 percent of it goes to the making of electricity.

I have discussed these details in my statement that I submitted. My focus today is on making certain that the electric generation industry, our customers, can use coal in the future, because the bottom line is that if coal cannot be used, coal will never be produced, and coal is solid electricity.

DOE forecasts the need for almost 400 gigawatts of new and replacement capacity over the next 20 years. This will require an investment much larger than the U.S. has made in the past two decades.

Although the future generating mix must be fuel diverse, just as it is today, the largest share of new base load capacity should be based on the use of reliable domestic and new advanced technologies increasingly with clean coal technology.

Unfortunately, at least 15 separate regulatory actions dealing with SO₂, and NO_x, and mercury, are now either pending at the EPA or in litigation. These proposals, combined with the uncertainties associated with deregulation of power generation, have effectively prevented consideration of new coal plants or modification of existing plants, to meet environmental regulations.

These proposals are based on the premise that more coal means more emissions; that coal and environmental protection are incompatible. This is not true. Coal used for electricity is greater than any time in our history, but overall emissions of the criteria pollutants are lower than what they were in 1970, when coal for electricity was only at 320 million tons per year.

And we have the technology to increase coal while continuing to reduce emissions. In the short term, the challenge is two-fold. Not to expand the use of advanced NO_x and SO₂ controlled technologies in existing plants, and to move newer demonstrated clean coal technologies to commercialization.

In the long term, the challenge is to develop and commercialize zero emission coal-fired plants. The coal industry supports legislation to meet these twin challenges. First, expand DOE programs for research and development of technology for both new and existing coal-based generation.

Second, provide incentives through an investment tax credit for retrofitting new emission control technology on existing boilers. Third, establish a risk-sharing program for a limited number of early commercial applications of advanced clean coal technology.

Finally, I would like to speak briefly to the climate change issue itself. If not carefully considered, climate change policy will work at odds with the goal of affordable, reliable energy to all the people of our Nation.

Mandatory reduction of carbon emissions automatically will mean higher costs of energy. Let me say unequivocally that CO₂ is not a pollutant, and it should not be defined as such. I understand, Mr. Chairman, that this has been a strongly held view of yours and we appreciate that.

I also note that yesterday the President offered his view on the issue as well, and we agree with that. There are better ways to approach this issue on an international basis and to have short term reductions, and short-sidedness as the Kyoto protocol lays out.

We would propose the following principles be a part of the discussion on the climate. America should recognize its vast land and water resources, and encourage greater development of natural carbon consumption methods or carbon sinks.

The Federal Government should greatly enhance research funding to promising mechanical and chemical carbon sequestration technologies. New technologies targeting efficiency and emission

improvements should be developed and deployed through Federal and private funding.

An aggressive, voluntary reporting and reduction program should be initiated, building upon the experience of previous voluntary actions. America's energy and economic needs mandate that CO₂ emissions not be arbitrarily capped, taxed, or regulated.

Mr. Chairman, we look forward to working with you in the coming weeks, and the Congress, and the administration, to develop a real national energy policy. Thank you.

[The prepared statement of J. Brett Harvey follows:]

PREPARED STATEMENT OF J. BRETT HARVEY, CONSOL ENERGY, INC. ON BEHALF OF
THE NATIONAL MINING ASSOCIATION

Mr. Chairman, I am Brett Harvey, President and CEO of CONSOL Energy, Inc. I am appearing here on behalf of the National Mining Association (NMA) to testify on the role that coal can and indeed, must, play in meeting our nation's future energy requirements. We would like to commend you Mr. Chairman for recognizing the importance of this valuable domestic fossil energy resource and for holding this hearing specifically on coal. Coal makes up over 90 percent of our domestic energy reserve. And, coal is electricity. It is the fuel for over 50 percent of the electricity that our citizens use to run our businesses and support our everyday lives. Coal is and must continue to be one of the cornerstones of our nation's energy strategy. Our statement today will focus on the potential of coal to meet a growing portion of our nation's future energy needs and the policies that must be in place to allow coal's potential to be realized.

GENERAL INTRODUCTION

CONSOL Energy Inc., founded in 1864, is the largest producer of high-Btu bituminous coal in the United States, the largest producer of coal by underground mining methods, and the largest exporter of U.S. coal. CONSOL Energy has 23 bituminous coal mining complexes in six states and two Canadian provinces. In addition, the company produces approximately 90 million cubic feet per day of coalbed methane gas. The company has a substantial technology research program focused on energy extraction technologies and techniques, coal combustion, combustion emission abatement and combustion waste reduction. CONSOL Energy is a publicly held company (NYSE:CNX) with 6,750 employees.

The National Mining Association represents producers of over 80 percent of America's coal, a reliable, affordable, domestic fuel used to generate over 50 percent of the electricity used in the nation. Our members also produce another form of energy—uranium. NMA represents companies that produce metals and non-metals, companies that are amongst the nation's larger industrial energy consumers. In addition, NMA members include manufacturers of processing equipment, machinery and supplies, transporters, and engineering, consulting and financial institutions serving the mining industry.

ENERGY IN THE UNITED STATES—AND THE NEED FOR A BALANCED ENERGY POLICY

Energy, whether it is from coal, oil, natural gas, uranium or renewable sources, is the common denominator that is imperative to sustain economic growth, improve standards of living and simultaneously support an expanding population. The significant economic expansion that has occurred in the United States over the past two decades, and especially over the last five years, was in no small measure due to reliable affordable energy, much in the form of electricity, much in the form of coal-fired electricity. The United States quite literally drove the developed world's economy during the last part of the 20th Century. The average annual rate of real economic growth in the US was 4.4 percent while that of all OECD nations was 2.8 percent. The amount of electricity generated by coal in 1999, indicative of the experience over the last 5-year, was 51.7 percent in the US but only 36.5 percent in the OECD as a whole. The cost of electricity averaged 4 cents per Kwh in the US, but was 6.6 cents per Kwh when considering all OECD countries. Energy in the United States is more affordable. And, energy in the United States is more electrified.

According to the Energy Information Administration¹, the trends experienced in the US over the last 20 years—economic growth, greater efficiency and a move to

¹ Annual Energy Outlook 2001, Energy Information Administration, December 2000.

electricity—are expected to continue over the next two decades. Economic growth is forecast to increase by an average 2.3 percent per year. Reflecting greater efficiency, the use of energy will grow by an average 1.3 percent per year or by a total of 32 percent to 127 quadrillion Btu. Consumption of all sources of energy will increase: petroleum by 33 percent, natural gas by 62 percent, coal by 22 percent and renewable energy by 26 percent. The economy will become even more dependent upon electricity over the next 20 years: consumption of electricity will increase by an average 1.8 percent per year, or by 45 percent, and, if the past is a guide, this electricity forecast is conservative.

Many policies will have to change, however, to make this forecast a reality. There is a growing gap between the expected demand for energy and the nation's capacity to supply that energy on a reliable, affordable basis. While consumption of energy has increased over the past twenty years (by 20 quadrillion Btu or by 25 percent), production of energy in the United States has not kept pace (increasing by a mere 5 quadrillion Btu or by only 7.6 percent). Only two sources of domestic energy have increased since 1980: coal and nuclear power. Coal is domestic. The nuclear generating industry, which relied on domestic uranium 20 years ago, is increasingly dependent upon foreign sources for uranium.

The fact that demand has outstripped supply is reflected in the overall increase in dependence on often politically unstable foreign sources, especially for petroleum. Dependence on imports is reflected in higher costs for gasoline and heating oil. The failure to invest in domestic energy is reflected in the recent sharp increases in the prices for natural gas, and in the increase in cost of electricity—at times actual shortages of electricity—in some regions of the country. The increase in the cost of energy and the scarcity of affordable electricity have, at least in part, caused the economy, as measured by real GDP, to slow in the fourth quarter of 2000 to only a 1.1 percent growth rate.

The energy policies of the past eight years, or lack thereof, have exacerbated the US demand—supply imbalance. Domestic policies have actively discouraged, and even prevented, investments in domestic energy production capacity, in our electrical grid, in our nation's energy delivery infrastructure. The increase in energy use in the United States during this time was fueled in large part on an increase in imports. The increase in the generation of electricity was possible because generating capacity had been over built in the 70's and 80's giving the US substantial reserve margins. Simply put, the US has been living off previous investments made in our energy infrastructure and the benefits of these investments have about run out. The energy supply industry has not been able to make the investments or develop and maintain the infrastructure that is necessary for the future.

The US is fortunate to have a large domestic energy resource within our borders and an established, although aging, energy delivery structure. To meet future demands however, our national energy policy direction must be redirected to one that encourages efficient, environmentally sound development of our nation's vast energy resource base and the use of technologically advanced methods to process, transport and use that energy.

COAL IN THE ENERGY MIX—AT PRESENT AND IN THE FUTURE

Coal reserves, which are geographically distributed throughout the US, comprise the greatest share of the nation's energy resource base. The demonstrated coal reserve is over 500 billion tons with economically recoverable reserves of over 275 million tons. This is a reserve large enough to support a growing coal demand for over 200 years.

Coal is the only domestic energy resource to INCREASE production levels over the last two decades. In 1980, coal production was 830 million tons. In 2000, 1.1 billion tons of coal were produced in mines located in 26 states and by 2020 the EIA projects coal production of 1.3 billion tons. During the past two decades average productivity in the coal industry has increased by nearly 250 percent reflecting in part shifts from underground to surface production and in part technological advances in mining operations. The average price of a ton of coal at the mine has declined in both real and nominal terms. The US coal industry is proud to pay wages to our miners that are among the highest of any industrial worker in the country. The US industry is the safest coal industry in the world, a record of which we are all proud, but a record on which we will not rest as the goal of the industry is zero injuries and fatalities. We expect this statement to continue to be true into the future.

Coal, or electricity generated from coal is used in all 50 states. The coal industry contributes some \$161 billion annually to the economy through payroll and purchases of goods and services and coal industry tax revenues add at least \$2 billion

annually to state and local government revenues. The industry directly and indirectly employs nearly 1 million people.

The market for coal is the electric generator. Last year 1.026 billion tons of coal were used to generate over 50 percent of all electricity used in the US. The industrial market, at approximately 32 million tons per year and the domestic market for coking coal of 28–29 million tons is very important, but small in comparison. The United States also exports coal, approximately 57 million tons in 2000

At the bottom line, coal is electricity.

The Energy Information Administration forecast referenced above shows that by 2020 electricity use will increase by 45 percent over today's levels. Coal use for electricity will total at least 1.25 billion tons in 2020, some 250 million tons or 20 percent more than is currently burned.

The reasons are straightforward: coal is domestic, coal is reliable and coal is affordable. To illustrate, in 2000, electric rates in regions dependent upon coal for electricity are, on average at least one-third lower than rates in regions dependent upon other fuels for electricity.²

And, coal is increasingly clean. Although coal use for electricity has tripled since 1970, emissions are lower by more than a third. New advanced clean coal technologies will enable this trend to continue and to accelerate, allowing greater use of coal with increased efficiency and lower emissions of the regulated criteria pollutants (SO₂, NO_x, and PM) as well as lower emissions of carbon dioxide both overall and per unit of electricity generated.

Coal serves an indispensable role in the United States energy equation and not only can, but will, provide a major part of the nation's energy requirements in the future.

US URANIUM IS ALSO AN IMPORTANT PART OF THE US ENERGY MIX

The United States uranium recovery industry is also to the Nation's energy independence and is essential to national security. Today, nearly 23 percent of America's electricity comes from clean nuclear power, which translates into the consumption of about 45 million pounds of uranium each year. However, the collapse in uranium prices since 1980 has produced a sharp decline in the viability of America's uranium mining industry. America's remaining uranium miners produce only about 3 million pounds—or just 6 percent of nuclear utilities' needs—of uranium annually. The balance of the uranium comes from rapidly declining inventories in the hands of the utilities, the federal government and foreign entities.

Under the current policy direction, the amount of electricity generated by nuclear plants is expected to decline over the next twenty years. However, this forecast may prove to be incorrect. Licenses for nuclear plants are being renewed and it is expected that almost all nuclear plants operating in the US today will apply for, and obtain, renewals to allow operation for an additional 20 years. There is some consideration of construction of at least one new nuclear plant. Thus, demand for uranium for will not decline but is likely to increase.

Historically, the United States was the world's leading producer of uranium and still has extensive proven reserves of natural uranium that offer the potential for secure sources of future supply. Only a strong domestic uranium recovery industry can assure an adequate long-term supply of uranium for the nuclear power component of the Nation's long-term energy policy and preclude threats of foreign supply disruptions or price controls that could adversely affect the Nation's common defense and security. Therefore, the federal government must foster energy policies that ensure a strong and viable domestic uranium recovery industry and must remove barriers to domestic production of existing sources of uranium.

A CHANGE IN POLICY DIRECTION IS REQUIRED

A change in policy direction is required if affordable energy is to be reliably available in the future. At the core, American's energy strategy must be grounded in market-based policies that lead to adequate, diverse and secure energy supplies. A balanced energy policy will be anchored in economic efficiency, will promote new energy technologies, and will limit use of regulation and support use of incentives. A responsible energy policy will achieve a balance between the benefits of energy use with the benefits of responsible environmental protection.

²According to the Energy Information Administration electric rates in the New England and Middle Atlantic States averaged 9.9 cents per Kwh through October 2000, 9.0 cents in California. As comparison, electric rates in the East South Central region (dependent upon coal for over 70% of generation) averaged 5.2 cents per Kwh in the same time frame.

Policies are needed to: enhance energy supply and encourage use of ALL energy sources; promote energy efficiency and conservation; assure free and competitive energy markets that in turn work to provide energy at affordable costs; promote energy technology development and long-range R&D initiatives; and, balance energy production and use with environmental concerns. Energy policy will include tax and fiscal policies, trade policies environmental policies and land use policies. Finally an energy policy needs to be predictable and must make certain that policies and activities of the various government agencies are coordinated and complementary rather than contradictory with conflicting goals.

Although many policies will be similar or even identical for all fuel sources, many will be fuel specific. It is the intent of this statement to focus solely on policies that will promote the production and use of coal.

COAL PRODUCTION ISSUES

Coal production totaled 1.1 billion tons in 2000 and is forecast to increase to over 1.3 billion tons in 2020. The United States has the reserve base to meet this forecast production level and more. However, government policies affecting the production of coal and as importantly the use of coal have discouraged or even prohibited investments in coal production infrastructure. As a result, a 1.3 billion ton annual production level or more cannot be reached without significant new capital investment to expand existing production capacity and to develop new reserves.

There are a number of policy changes that are required to ensure that coal production capacity will be sufficient to meet future demands.

Access to coal reserves is being limited, not by depletion through mining, but by government action. Declaration of large areas of land as "National Monuments" coupled with initiatives such as the recent US Forest Service Roadless regulations have removed large blocks of land, and many millions of tons of coal reserves, from potential exploration and development. Removal of the largest domestic fossil resource from use is directly contrary to any energy policy that is directed toward increasing energy self-sufficiency and making energy available to all at affordable prices.

Failure of the Federal government to act in a timely manner on lease applications has prevented expansion of many existing mines. This will exacerbate any shortage of supply in the not too distant future. (These and other land use policies are discussed in more detail in a March 7, 2001 statement of the National Mining Association provided for the record.)

Interpretation of the Clean Water Act as it relates to mining is prohibiting expansion of mining operations especially in Appalachia. Indeed, production at some operations is being curtailed or the operations closed because reserves are being effectively sterilized or taken off line by prohibitive environmental regulations.

These issues must be addressed in the National Energy Policy as it is being developed by the Congress, as should tax policies such as retention and extension of the depletion allowance and elimination of the alternative minimum tax.

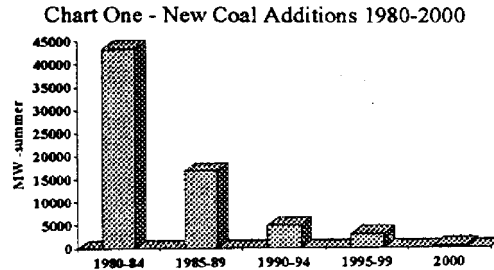
The National Energy Policy should also support the Department of Energy's coal production research program. At present the funding for mining research is very low despite the critical importance of our mineral resources to national energy security and the economy. Support for research, with a specific program tailored to provide funding for mining research by academic institutions, would contribute to two important administration goals: a viable energy future and enhanced educational opportunities for those that will be the future leaders of our nation.

Finally, no discussion of policies required to assure the future availability of coal would be complete without a statement about the need for investment in the coal delivery system. Coal is shipped from the mine to the consumer by rail and by water. While investments are required to expand production capacity, investment to maintain and expand our rail and waterway systems will also be required to move coal to the market on a reliable, timely basis.

POLICIES ARE NEEDED TO ENCOURAGE GREATER USE OF COAL

Coal is electricity. Nearly 95 percent of the coal used in the United States goes to generate over 50 percent of all the electricity that is used by industry, businesses, governments, schools and homes. But, just as investments have not been made in coal production capacity (or other energy production capacity), investments have not been made in base load generating plants. Evidence of the lack of generating capacity has surfaced over the past two years in brownouts in the Midwest and in the volatile, and extremely high, prices for electricity during periods of peak demand. And, nowhere has this generating crisis been more evident than in the past winter in California where citizens of the northern part of that state were subjected to an almost continual threat of rolling blackouts.

Base load generating capacity has not been built when and where it is needed. Coal plants are base load, and coal plants have not been built over the last decade as illustrated in Chart One.



“The U.S. has consumed much of its available electric generating capacity margin over the past 20 years and the consolidated capacity margin available today above peak level demand has not been this low since the late 1960’s.”³

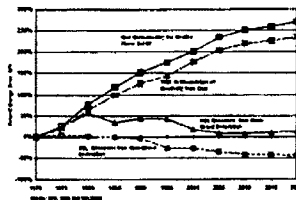
New base load plants must be built—both to meet new electricity demands and to replace capacity that will be retired. According to the Department of Energy by 2020, 65 percent of all base load plants in the United States will be more than 40 years old. Nearly 400GW of new and replacement capacity will be required by 2020—the equivalent of 1,300 plants at 300 MW each. This capacity is not being built. According to DOE, construction of only 14 MW of new capacity is planned. Some 378 MW of the needed capacity, a full 96 percent, is still in the “unplanned” category.⁴ Over the last few weeks announcements have been made about some new generating capacity, coal and gas. But these are announcements only, not firm construction plans. The National Energy Strategy must address this problem and address it quickly.

Although the future generating mix must be fuel diverse, just as it is today, the greater share of new base load generating plant should be based on the use of reliable, domestic and increasingly clean coal. The policies of the last eight years that have discouraged construction of any generating capacity, but especially coal capacity, must change direction. Coal based generation needs to be preserved to ensure a diversity of fuel supply and affordable and reliable electricity that in turn is necessary if we are to maintain a strong economy.

ADVANCED CLEAN COAL PLANTS CAN MAKE A DIFFERENCE

A stated concern about coal fired capacity, whether in existing or new coal fired power plants is the level of emissions of SO₂, NO_x and particulate matter from coal generation. Emissions of both, along with emissions of particulate matter are controlled under the Clean Air Act and the standards of the Clean Air Act as amended in 1990 are being met. As shown in Chart Two, even though coal use by generators is greater today than at any time in history, emissions of the listed pollutants are lower.

Chart Two - Change in Coal-Based Electricity Generation, Coal Consumption, Emissions since 1970



³“Got Coal?” James F. Wood, President, Babcock & Wilcox Co. Global Energy Business, January 2001

⁴Annual Energy Outlook, 2001. Energy Information Administration, December 2001

Despite proven trends, the previous administration attempted to promulgate regulations that would require emission levels that are lower than the Clean Air Act currently requires. At least 15 separate regulatory actions dealing with SO₂, NO_x, and mercury are now either pending at the Environmental Protection Agency or are in litigation. These regulatory actions, coupled with the move towards competition within the electric sector, have combined to effectively prevent consideration of new coal generators or the modification of existing plant. To cite just four examples:

- In December 2000, the EPA announced its decision to regulate mercury emissions. National Mining Association urges Congress to review the basis used by the EPA for its regulatory decision, and determine if all relevant scientific evidence was given appropriate and equal weight. The government should support the development and demonstration of cost-effective mercury control technology for existing coal-fired power plants.
- Also in 2000, the EPA made an effort to regulate coal combustion solid byproducts as hazardous wastes. This had no sound scientific basis, and was strongly and successfully opposed. The EPA should abandon this effort. As a proactive alternative, the DOE, through its Fossil Energy program, should put high priority on developing and demonstrating technologies that allow reuse of coal combustion solid byproducts (such as fly ash and SO₂ scrubber products) in a manner that meets environmental goals.
- The EPA is reviewing the ambient air standard for airborne particulate matter. The DOE should receive adequate funding to support its ongoing research on the composition and concentration of particulate matter, its impacts on ambient and indoor air quality.
- The EPA has been aggressively assailing existing coal-fired power plants by asserting that routine, ordinary maintenance places a plant under the New Source Review provisions of the Clean Air Act. This has made many utilities reluctant to conduct demonstrations of new technologies that can help meet environmental goals, but could trigger EPA enforcement action. Congress should ensure that electricity generators who are willing to demonstrate new environmental technologies are not subject to New Source Review.

A cost effective way to improve environmental performance is to increase power plant efficiency, which can be done using developing technologies, such as Integrated Gasification Combined Cycle and Ultrasupercritical systems. Ultimately, advanced concepts, such as that of the DOE's "Vision 21" program, offer the advantages of clean, efficient power, with simultaneous production of liquid transportation fuels to reduce our dependence on imported petroleum.

Whether installation of emission control technologies through the retrofit of existing plants, repowering at existing plants or construction of new capacity at green-field locations, use of new advanced technologies mean that electricity can be produced from coal more efficiently and with lower emissions.

In the shorter term the challenge is twofold: to expand the use of newer more advanced NO_x and SO₂ control technologies in existing plant through retrofits and to move new advanced clean coal technologies that have been proven at the demonstration stage to, and through, commercialization.

The National Electricity and Technology Act (NEET) was developed to meet this challenge. NEET, which has been introduced in the Senate and is being considered for introduction on this side of the Congress includes short, medium and long term programs designed to improve efficiency and reduce emissions while at the same time ensuring that the nation will have the coal fired generating capacity needed to meet current and future demands for electricity. NEET has three important programs designed to work together to preserve the reliable, affordable and clean, coal fired option.

- First, NEET creates a financial incentives program through an investment tax credit to cushion the financial burden faced by existing generators that must retrofit with emission control technology in order to meet new emission regulations. This program will improve both the operational and the environmental performance of existing boilers.
- Secondly, NEET establishes a financial and risk sharing program for a limited number of early commercial applications of advanced clean coal technologies. The investment tax credit for new units or units that are repowered coupled with an efficiency based production tax credit will offset the risks inherent in building the "first of a kind" technology that has been demonstrated by that is not yet commercial. These advanced power systems are still regarded as having a higher technical risk than conventional technology and are more expensive to build and operate. NEET will offset enough of the risks to make commercialization of these technologies—important for the future use of coal but equally im-

portant to promote fuel diversity for economic, environmental and energy security reasons—possible.

- Finally, NEET focuses on research and development technology for new and existing coal-based generation establishing cost and performance goals and authorizing the research necessary to meet those goals.

In the longer term, we need technologies to use coal that are even more advanced than those developed under the Clean Coal Program and now awaiting commercialization. A generation of cleaner, more efficient plants must be available for the eventual replacement of the existing fleet.

The Department of Energy's "Vision 21" program should be accelerated. One of the goals of the program is to develop a coal fired plant with "near zero emissions of sulfur and nitrogen oxides, particulate matter, trace elements, and organic compounds; 40-50 percent reduction in CO₂ emissions by efficiency improvements; 100 percent reduction with sequestration."⁵ National Mining Association would suggest that these goals should be met no later than 2025.

Despite much uncertainty about the extent and impact of climate change, the Department of Energy's program on carbon management should be given high priority. Emphasis should be placed on developing and demonstrating technology options for CO₂ capture and sequestration. It is particularly important to gain a full understanding of the technical potential, cost and timing of the various options as a guide to policy analysis.

Coal has the potential to provide the fuel for an ever-growing demand for electricity. New technologies are available to allow coal use with even lower emissions than today, and research must be conducted to bring those emissions to near zero levels over the long term.

THE CLIMATE CHANGE ISSUE AND THE CONTROL OF CARBON EMISSIONS

The subject of a National Energy Strategy cannot be addressed without a discussion of climate change and proposals to require a reduction in carbon emissions. Since 1993 United States climate policy has been driven by events in the international arena, first by the requirements of the 1992 Framework Convention on Climate Change ratified by the US in September 1992 and, since December 1997, by the terms of the Kyoto Protocol, an agreement that has yet to be ratified by any developed nation.

National Mining Association would submit that the singular focus on implementation of the Protocol's short term mandatory emission reduction requirements to the exclusion of all else has prevented a responsible debate on the climate issue and on potential long term, technology driven, global solutions to carbon reduction should those reductions be necessary.

Internationally, the Administration has the opportunity to advance the debate on climate beyond the Protocol to a more responsible level that addresses climate as a global issue. Countries have begun to realize that the short term legally binding targets of Kyoto are not feasible from an economic standpoint nor would they prevent a rapid increase in carbon emissions as the targets are limited to developed countries only. The global issue has not been addressed from a global standpoint and it is time to move beyond Kyoto. If an international agreement is needed, it should focus on development and global deployment of energy efficient technologies along with the developing countries requirements to expand their economies and build their educational and technological capacity.

From a domestic standpoint, energy policy must address carbon emissions, as climate policy is energy policy. Over the past few months the suggestion to develop simultaneous reduction targets or caps for SO₂, NO_x, mercury and CO₂ has gained some currency. This suggestion is called the "multi-pollutant approach" to emissions control and is being suggested as a way to give electric generators a more consistent, comprehensive and certain regulatory environment in which they can plan.

The National Mining Association is opposed to a "multi-pollution approach" to the control or regulation of CO₂.

Fundamentally CO₂ should never be termed a pollutant because it is essential to our cycle of life: It triggers our desire to breathe; it enables photosynthesis growing the very first link in the planet's food chain. CO₂ is ubiquitous and good. In the history of the world cycling from ice ages, glaciers, to more hospitable climates, we are experiencing a continual growth in atmospheric CO₂. While the human involvement in this growth represents less than one percent of greenhouse gas emissions, being

⁵"Vision 21: fossil Fuel Options for the Future", Committee on R&D Opportunities for Advanced Fossil-fuel Energy Complexes, Board on Energy and Environmental Systems, Commission on Engineering and Technical Systems, National Research Council. December 2000.

emissions from motor vehicles, power plants, factories, homes, disposal sites, and, yes, even mines, it is appropriate for a national energy policy to examine further what might be done to mitigate greenhouse gas emissions and at what cost to the nation's economy. Clearly research into mechanisms of gas sequestration is a wise policy in view of the potential policy choices that may have to be made in the future.

CO₂ is not an air pollutant and does not warrant regulation in an integrated multi-pollutant approach. Including CO₂ in a multi-pollutant program would be extremely costly,⁶ and would undercut the goals of a National Energy Strategy—affordable and reliable energy for all American consumers.

Inevitable increased energy use is simply inconsistent with reducing carbon dioxide emissions. We propose the following as to begin the discussion on an alternative public policy approach to climate change.

- America should recognize its vast land and water resources and encourage greater development of natural carbon consumption methods (carbon sinks).
- The federal government should greatly enhance research funding for promising mechanical and chemical carbon sequestration technologies.
- New technologies targeting efficiency and emissions improvements should be developed and deployed through federal/private funding and incentives.
- An aggressive voluntary reporting and reduction program should be initiated, building upon the experience of previous voluntary actions.
- America's energy and economic needs mandate that carbon dioxide emissions cannot be limited, taxed or otherwise regulated.
- Appropriate measurements of success for a common-sense carbon program would compare carbon dioxide emissions levels through voluntary actions against reference-case benchmarks profiling the likely effects of no action.
- Continued additional research into climate, both through private and public means, is appropriate and necessary.

This concludes my statement Mr. Chairman, I would be happy to answer any questions.

Mr. BARTON. Thank you. If we didn't have four more witnesses, I liked your testimony so much that I would ask you to repeat it, but we do have others. We now want to welcome Mr. Cecil Roberts, who is President of the United Mine Workers of America.

Every Democrat wanted to personally introduce you. So we are not going to let any of them. Let me simply say as a Republican that I am very glad that you are here and that you have never been on the other side insofar as I know in any of my races. So I welcome you to the subcommittee. Your testimony is in the record in its entirety, and we recognize you for 6 minutes to elaborate on it.

STATEMENT OF CECIL E. ROBERTS, PRESIDENT, UNITED MINE WORKERS OF AMERICA

Mr. ROBERTS. First of all, Mr. Chairman, thank you for the invitation to come here today, and I want to thank the entire committee for the opportunity to voice the concerns of coal miners who are involved in this debate.

I have had the wonderful opportunity to work with the ranking Democrat on this committee on many occasions to protect coal miners, and invest in coal mining in this country, and to see that it remained a viable part of our economy.

I have also had the opportunity to work with Congressman Strickland for many, many years, and I wanted to thank personally

⁶A December study by DOE's Energy Information Administration found that emissions reduction of SO₂ or NO_x (reflecting the proposals introduced in the 106th Congress) would have little impact on the nation's electricity costs. By contrast, including CO₂ would result in significant costs for the nation and American energy consumers within ten years including: raising the electricity "resource cost of service" by \$70-90 billion annually; increasing national electricity prices by 29-42 percent; raising natural gas prices by 31-55 percent and lowering US economic activity by \$60—80 billion in 2010 alone. EIA—Analysis of Strategies for Reducing Multiple Emissions from Power plants. December 2000.

today Congressman Shimkus from Illinois for his help in saving the coal mine that he alluded to previously.

For 111 years the United Mine Workers of America have played a vital role in coal field communities. One of the things that I would ask that we do today is not forget about those communities as this debate rages. Too often Congress acts and then someone else has to figure out the consequences for that action.

In 1990, for example, with the passage of the Clean Air Act, the United Mine Workers did not oppose the passage of that Act. We did engage in pointing out to Congress that without some reasonable approach to the Clean Air Act that many coal field communities in Appalachia were going to be devastated.

And I think the last 11 years, unfortunately, has proven that to be factual. Areas of southwestern Pennsylvania, northern West Virginia, parts of Ohio, Indiana, Illinois, as the representative from the administration pointed out on her chart, have been devastated.

The objectives of the 1990 Clean Air Act in our opinion could have been met through the utilization of technologies, as opposed to fuel switching. That fuel switching transferred many jobs out of Appalachia to the western part of the United States.

And I think as all of us are aware with me being from Appalachia, I think I can speak directly to this. Appalachia could not afford to lose those high-paying jobs. I am here today to speak on behalf of those coal miners from Appalachia.

We represent about 110,000 people, many of whom are retired already. We represent a hundred-thousand pensioners who depend on the viability of the coal industry to see that pension checks are delivered to these coal field communities on a monthly basis.

About a 110 to 115,000 people who are already retired, counting their dependents, depend on health care from the coal industry to see that they are able to go to the clinics, and hospitals, and the doctors, and the pharmacies in Appalachia.

We also represent about 25,000 unemployed coal miners who have unfortunately seen their mining careers come to an abrupt end sooner than what they should have. And we also represent a significant number of working miners.

What is this debate about to me? It really isn't a Democratic issue or a Republican issue. A few months ago, and in fact during the Presidential campaign, I made a statement that we had not had an energy policy in the United States of America that I could recall since Jimmy Carter was the President.

And someone asked me does that include Democrats, and I said, well, have we had any Democrats who were President since Jimmy Carter left, and I said that I think it is factual. That it is time for this Nation to come to grips with the situation that we find ourselves in.

And quite often costs are attached to this question of having a viable energy policy in the United States of America. But I think it is incumbent on this country not to be so dependent on others in different parts of this world to see if we can have energy that we need to have our economy grow.

And I speak directly to the many consequences of having to provide military support in these areas of the country, and American

young men having to go off to war to see that that energy has continued to flow into the United States.

There is an abundance of coal in this country, and coal miners have improved productivity astronomically. Unfortunately, many of those coal miners have been rewarded with losing their jobs, because coal has become a dirty word in this country when we talk about where we are going into the future.

We should remember that we have approximately 275 years worth of available coal that is minable in this country. We do not have to be dependent on anyone else in the world to supply our energy needs.

And I want to speak one more time if I might to the vital role that coal plays in some of these economies, like in Southern West Virginia, Eastern Kentucky, Southwestern Pennsylvania, Ohio, parts of Illinois, Indiana.

We need to keep in mind that there are hard working coal miners out there doing their part to see that this Nation does not have to fall victim to some other parts in the world, and their desires to hurt America, or to increase the cost to American consumers.

We believe that coal can provide a low cost fuel into the future, and the one thing that I would want to point out is that there has been about a 200 percent increase in the utilization of coal since the original passage of the Clean Air Act in 1970.

But there has been a dramatic decrease in the amount of emissions coming from those coal-fired facilities in America since 1970. So we have had a 200 percent increase in the utilization of coal, and at the same time a decrease in the amount of emissions going into the atmosphere.

On the issue of carbon, the one thing that I must say to this subcommittee is that there is no one technology presently available to sequester carbon from a coal-fired plant. So if you are talking about reduction of carbon from utilities in this country, you are really talking about the reduction of the burning in coal in America. You are not talking about anything else.

Mr. BARTON. We have broken that code, sir. Most of the members of the subcommittee understood that.

Mr. ROBERTS. In closing, I would just submit to you and suggest to you that we should not pass regulations that outrun our technology, and I believe if you look at some of the recent studies that have been done that technology can be developed, but it is probably going to be around the year 2015, perhaps sooner.

But 2015 is a realistic date for technology to exist to reduce carbon from the burning of coal in utilities. So I think it is important to note that many coal miners in this country—not only working coal miners, but retired coal miners, laid-off coal miners, and disabled coal miners—are extremely dependent on this industry, as well as the American consumer, to have a cheap source of electricity.

And with that, I thank you for this opportunity.

[The prepared statement of Cecile E. Roberts follows:]

PREPARED STATEMENT OF CECIL E. ROBERTS, PRESIDENT, UNITED MINE WORKERS OF AMERICA

Mr. Chairman, members of the subcommittee, I want to thank you for the opportunity to discuss the role of coal in U.S. national energy policy. I am Cecil E. Rob-

erts, president of the United Mine Workers of America (UMWA). The UMWA has represented coal miners and other workers in the United States and Canada for over 111 years. Our members work in all facets of the coal supply chain; they include underground coal miners, surface coal miners, preparation plant workers, barge workers, truck drivers, mine construction workers, utility workers and coal technology workers. In addition to active workers in the coal industry, the UMWA represents the interests of over 100,000 retired coal miners and widows who look to the UMWA for the protection of their health and retirement benefits.

As an institution, the UMWA is very interested in the subject of today's hearing. We believe that every American citizen should be concerned about our energy situation and the role that coal can play in our national energy policy. It has been difficult to pick up a newspaper in the last year without reading about energy issues. We all know that the people of California have been struggling for some time with an electricity crisis. Last summer, gasoline prices spiked to about \$2 per gallon. And this winter many people have struggled to pay for natural gas and heating oil as the price of those essential commodities has skyrocketed.

At the same time we are becoming more dependent on foreign sources of energy. Indeed, we are much more dependent on foreign oil today to run our economy than we were during the oil shocks of the 1970s. In 1973, the U.S. consumed nearly 35 quadrillion Btus of petroleum products to operate our economy. Petroleum imports totaled about 13.5 quadrillion Btus, meaning that the U.S. depended on foreign suppliers for about 39% of domestic oil consumption. Today, our economy consumes nearly 38 quadrillion Btus of petroleum, an increase of slightly more than 8% above 1973 levels. However, our reliance on imported oil has grown substantially; today we import about 22.5 quadrillion Btus of crude oil, indicating a reliance on foreign suppliers of about 60%. At the same time our imports of natural gas have increased from less than 5% of consumption to more than 16% in recent years.

U.S. COAL RESERVES

Coal is an indispensable part of America's energy supply and the United States is blessed with an abundance of coal. The latest estimates indicate that the U.S. has a demonstrated coal reserve base of over 500 billion tons, with an estimated 275 billion tons of recoverable reserves. At current production rates, this represents about 275 years of recoverable coal reserves. Coal represents about 95% of all U.S. fossil fuel energy reserves. About one-quarter of all the world's known coal reserves are found in the United States. U.S. recoverable coal reserves have the energy equivalent of about *one trillion* barrels of oil. That is comparable to *all* of the world's known oil reserves.

While we are blessed with an abundant supply of coal, we are challenged in its use because of our national concern about the environment. First, coal is not easily extracted from the earth. One must either sink shafts to access the coal seam in underground mines or remove the overburden to expose the coal seam in surface coal mining operations. These activities temporarily disturb the environment and reclamation must occur at the end of the mining cycle in order to ensure that the land is as productive after mining as it was before mining. Coal contains sulfur, nitrogen, mercury and carbon, among many other mineral components. When coal is burned in its raw state, these elements combine with oxygen and are emitted into the atmosphere. The potential environmental impacts of mining and consumption of coal have led some to conclude that coal should be removed from our energy mix. We think this is an unwise conclusion, but it does point out the challenge that those of us who advocate the use of coal have before us.

The nation demands a cleaner environment at the same time that it demands low-cost, reliable and available energy. For coal to continue to play the vital role that it can and should play in our energy mix, we must ensure that coal is mined in environmentally acceptable ways and that it is burned with the minimum amount of emissions that technology will allow. This means that we must continue to develop highly advanced technologies to convert coal to a usable form of energy more efficiently and to capture any harmful emissions before they escape into the atmosphere.

COAL PRODUCTION

Coal accounts for about one-third of total domestic energy production, making coal the largest single source of domestically produced fuel. Coal currently accounts for about 23% of U.S. energy consumption, with the vast majority of coal being used in the production of electricity. However, coal is also vital in the production of steel and cement, and is a major fuel or feedstock in chemicals, paper manufacturing and

food processing. In addition, U.S. coal plays an important role in world coal exports, ranking third in world coal shipments with about 60 million tons.

In 2000, the U.S. coal industry produced about 1.1 billion tons of coal. Coal is produced in 26 states across the United States. The major coal producing regions are Appalachia, stretching from Pennsylvania to Alabama; the Illinois Basin, with mines in Indiana, western Kentucky and Illinois; and the West, with coal production in the Rocky Mountain states of Arizona, New Mexico, Colorado and Utah and the northern Great Plains states with production in Wyoming, Montana and North Dakota. The top three coal producing states are Wyoming, West Virginia and Kentucky. These three states account for nearly 60% of total U.S. coal production. In terms of employment, the top three states are Kentucky, West Virginia and Pennsylvania, which account for about 55% of U.S. coal mine employment. The reason that the top three producing states are not the same as the top three employment states is that Wyoming produces coal from large scale surface mines that require much less labor to produce a ton of coal than other states. For example, Wyoming mines typically produce coal at a rate of about 40 tons per worker hour, while the average productivity in Appalachian mines is about 4 tons per worker hour.

COAL EMPLOYMENT

The U.S. coal industry provides direct employment for about 80,000 workers. These workers include production and maintenance workers who work in underground and surface mines and in preparation plants. Employment has declined significantly in the last twenty-five years from a peak of nearly 250,000 workers in 1978 to less than 80,000 today.

COAL TRANSPORTATION

Coal is transported by railroads, barges, trucks, overland belts, and slurry pipelines. The dominant form of coal transportation on a national basis is railroads, which account for about 62% of all coal movement. In 1999, coal accounted for 41% of all freight tonnage moved by U.S. rail carriers. Barges carry about 14% of all coal that is distributed in the U.S. while trucks haul about 12%. The remaining 12% is carried by Great Lakes and tidewater barges, conveyors and slurry pipelines. On a regional basis, barges and trucks take on a more important role. For example, in the Middle Atlantic and East South Central regions, which have access to river transportation on the Ohio and Mississippi rivers, barges account for about one-quarter and one-third of coal shipments, respectively. In addition, truck transportation historically has accounted for about one-quarter of coal shipments in these regions due to the close proximity of the coal mine to the power plant.

COAL CONSUMPTION

Coal consumption is dominated by electric utilities which consume nearly 90% of all coal production. Industrial users, such as cement, chemical and paper manufacturers, typically consume about 70 million tons of coal each year. Steel mills and coke ovens consume about 30 million tons per year to make steel. In addition, coal exports account for about 60 million tons of coal demand.

COAL AND ELECTRIC UTILITIES

The U.S. coal industry has become inextricably linked to the electric utility industry over the past few decades. Recent declines in the use of coal in the domestic steel industry and in export markets make that dependence even greater. For example, fifty years ago, electric utilities accounted for only about 20% of U.S. coal demand. Since that time, coal use has steadily grown in the electric utility sector and declined in the residential and commercial sector, in the transportation sector and among coke plants and other industrial users. By 1970, electric utilities accounted for about 60% of U.S. coal demand. Today, demand from the electric utility sector accounts for about 90% of all U.S. coal consumption. Because of the dominance of the electric utility demand, the viability of the coal industry is linked to the ability of the electric utility industry to continue to burn coal. Thus, the national efforts to control sulfur dioxide (SO₂), nitrogen oxides (NO_x) and particulates over the last three decades have been of concern to the coal industry. Likewise, emerging efforts to control mercury and carbon dioxide (CO₂) emissions will have an effect on coal production.

While electric utility demand dominates the coal industry, coal is the single largest source of fuel for generation of electricity, accounting for more than half of electricity production in the U.S. This is more than double the share of any other fuel source. This reliance on coal-based electricity generation results from an abundance

of supply and low costs. According to the U.S. Energy Information Administration, coal-fired electricity generation per kilowatt-hour costs about half that of natural gas-fired generation.

While the share of coal-fired electricity generation nationwide is impressive, a look at the regional share of electricity generation shows that coal is the dominant fuel in the West North Central region (76%), the East North Central region (73%), and the Mountain and East South Central regions (70%). Some states are even more dependent on coal for electricity generation.

The largest states in terms of generation of electricity from coal are Texas, Ohio, Indiana, Pennsylvania and West Virginia. Together these five states account for nearly one-third of national electricity production from coal.

COAL AND THE ENVIRONMENT

Coal use has grown steadily over the last 30 years. When the Clean Air Act was passed in 1970, U.S. electric utilities burned 320 million tons of coal. This year they are expected to consume nearly 950 million tons, an increase of nearly 200%. At the same time, emissions of sulfur dioxide, particulates and nitrogen oxides from the electric utility sector have declined substantially. These gains, however, have not come without a cost. Indeed, UMWA members in northern Appalachia and the Midwest paid a very high price in lost jobs as a result of the Clean Air Act amendments of 1990. That law required utilities to reduce emissions of sulfur dioxide in order to address the problem of acid rain. Although we have proven, reliable technology that can remove 98% of SO₂ emissions from the utility smokestack, many utilities opted to switch fuel supplies from high-sulfur to low-sulfur coal. Indeed, about half of the emission reductions in Phase I (effective 1995) were achieved through fuel switching. This caused significant disruptions in traditional utility coal markets as utilities moved away from northern Appalachian and Midwestern high-sulfur coal suppliers to low-sulfur coal suppliers. Thousands of coal miners lost their jobs as a result of this fuel switching. Most of the displaced eastern production moved to western production, primarily in the Powder River basin in Wyoming. Indeed, Wyoming coal production has nearly doubled from 184 million tons in 1990 to about 340 million tons today. As noted earlier, Wyoming coal mines enjoy extremely high rates of productivity, so the jobs lost in northern Appalachia and the Midwest were not gained in Wyoming.

While the coal communities of the Midwest and northern Appalachia have been struggling to cope with the loss of jobs resulting from the 1990 Clean Air Act amendments, electric utilities have been faced with new demands from regulators to further reduce emissions. The U.S. Environmental Protection Agency (EPA) has issued rules calling for reduction of nitrogen oxides in a 22-state region (the SIP call), revised the National Ambient Air Quality Standards (NAAQS) for ozone and fine particulate matter, and has set the stage for regulation of mercury. In addition, EPA in 1999 filed suit against a number of eastern utilities, charging them with violation of new source review requirements at plants that comprise about 10% of U.S. coal-fired capacity. In the international arena, the United States has signed, but not ratified, the Kyoto Protocol, which calls upon the U.S. to reduce emissions of greenhouse gases, including CO₂, by 7% from 1990 levels by 2008-2012.

While technologies exist to deal with emissions of SO₂, NO_x, fine particulates and mercury, there currently are no technologies (other than efficiency improvements) available to deal with demands for carbon reductions. The U.S. Department of Energy recently embarked on a program to research and develop technologies to capture and sequester carbon gases, but the expectation is that these technologies will not be available until 2015-2020 at the earliest. It is widely recognized that efforts to reduce greenhouse gas emissions before such technologies are available are likely to lead to significant reductions in domestic coal use.

THE ROLE OF COAL IN COAL MINING COMMUNITIES

Although coal employment has declined substantially in the last twenty years, coal is still an important economic engine in coal field communities. Coal mining tends to occur in isolated rural areas with little alternative employment opportunities. The primary jobs at coal mining companies, railroads and coal-burning utilities tend to be among the highest paying jobs in the community. These jobs not only provide high wages, but tend to have full benefits, including health care and retirement benefits. Coal provides an important source of state revenue in major coal producing states, but the effect of coal on government financing is felt most in counties that are heavily reliant on coal.

Coal, as a basic industry, ripples through the economy providing economic benefits to workers and businesses that directly relate to the coal industry, such as

equipment manufacturers, materials suppliers, utilities and transportation companies. In addition, coal wages ripple through the economy providing revenue and jobs in unrelated service industries as the workers spend their income to provide for their families.

Nationwide, the coal industry generates revenues of about \$20 billion per year. Using conservative economic multipliers developed by the U.S. Department of Commerce, we estimate that the coal industry generates over \$10 billion in household earnings and nearly \$38 billion in output for all businesses. The industry generated 361,204 jobs in all industries, including 81,516 jobs in the coal industry. The impact of these economic benefits are even more pronounced when viewed on a state level. I have attached an analysis of major coal producing states for 1998 (the latest year that detailed data have been published). This shows the huge impact of the coal industry on states such as West Virginia and Kentucky. Nearly 42% of total coal industry revenues were generated in those two states. The total business output derived directly and indirectly from the coal industry in West Virginia and Kentucky was over \$15 billion, and coal provided over 150,000 jobs. In rural Appalachia, it is difficult to imagine what would happen to local and regional economies if the coal industry were to disappear.

I said that these are conservative numbers because they only measure the first round impacts of coal mining on the local economy. A study done by economists at Penn State University about a decade ago showed that the impacts are even greater when successive rounds of economic stimulus are measured. That study concluded that the employment effect was closer to 6 direct and indirect jobs for every coal mining job (rather than the 3-4 jobs implied by the Commerce Department multipliers) and that the overall economic output in all businesses derived from coal mining was more than twice the amount estimated by the Commerce Department multipliers.

CONCLUSION

It is obvious that coal, though a small industry, is a critically important industry in America. It is our largest reserve of fossil fuel, comprising about 95% of America's total fossil fuel reserve. We have the energy equivalent of a trillion barrels of oil, more than the world's entire oil reserve. We use it to produce over 50% of our electricity nationwide and some of our major manufacturing regions and states use coal to generate 70% or more of their electricity. And coal provides much-needed high wage jobs in areas of the country that do not enjoy a diverse economy. The economic benefits of coal to the coal mining communities are enormous.

It is clear, however, that environmental challenges must be met in the future in order for coal to retain its rightful place as a keystone of U.S. energy policy. While billions of dollars have been invested since 1970 to clean up emissions from coal-fired power plants, we must continue to invest in new technologies to improve the efficiency of power plants and to remove harmful pollutants. But we should avoid energy and environmental policies that outrun our technological abilities and tend to move coal out of our energy mix. That would be very costly in the short-run and foolish in the long-run.

Mr. Chairman, I thank you for the opportunity to appear before the subcommittee. I hope that my presence here is helpful to all the members as they debate our energy future. I would be happy to answer any questions you may have.

Mr. BARTON. Thank you, sir. Now we want to recognize Dr. Roe-Hoan Yoon, and Mr. Boucher wishes to more formally introduce you to the subcommittee.

Mr. BOUCHER. Well, thank you very much, Mr. Chairman. I am pleased that we are joined today by one of my constituents, Dr. Roe-Hoan Yoon, who has a global reputation for the leading edge work that he has done in precombustion coal technologies from his laboratories at Virginia Tech, which I would add have enjoyed Federal support in their work.

Dr. Yoon has produced technologies that have enabled coal companies to produce coal at a lower cost, and has been able to produce technologies that beneficiate the coal through precombustion coal cleaning technologies.

And Dr. Yoon is here today to suggest to us the proper research and development role that will make coal more useable still in the

electricity generating market. Dr. Yoon, we are delighted to have you here.

Mr. BARTON. Welcome. Your testimony is in the record, and we would ask you to summarize it in about 6 minutes, sir.

STATEMENT OF ROE-HOAN YOON, DIRECTOR, VIRGINIA CENTER FOR COAL AND MINERALS PROCESSING, VIRGINIA TECH

Mr. YOON. Thank you, Mr. Chairman, and members of the subcommittee, and thank you, Congressman Boucher, for your kind words. I appreciate the opportunity to present my views on the need to develop advanced separation technologies for producing cleaner coal.

In the year 2000, coal accounted for approximately 56 percent of the electricity generated utilities. According to the annual Energy Outlook 2001, the price of electricity should decline from 6.7 cents per kilowatt power in 1999, to 6 cents in the year 2020.

This prediction was in-part based on an assumption that the coal price at the mine mouth would continue to decline by 1.4 percent per year due to increased productivity, but we may have a problem with this assumption.

In Southwest Virginia where I live, some of the world's best coals are produced. However, the cost of producing coal increases each year as mines go deeper underground. In addition, part of the coal mine at high costs is being discarded due to the difficulty in cleaning fine coal.

In the industry today run-of-the-mine coals are washed in water to remove non-combustible mineral matter from coal. The cost of cleaning the coal particles finer than approximately 0.15 millimeters in size are substantially higher than the costs of cleaning coarse coal.

Therefore, many coal companies discard the fine coal, along with the water, to fine coal impoundments. In general, 5 to 10 percent of the coal mines in the Eastern U.S. is too fine to be cleaned efficiently, and therefore perhaps more than 50 percent of the fine coal is being discarded.

According to a recent survey conducted by DOE, 2.5 to 3 billion tons of fine coal has been discarded in various impoundments. Exhibit 1 shows a photograph of a coal slurry impoundment located in Virginia.

The coal discarded in this impoundment represents, one, the money that the coal company has already spent for mining. Two, a waste of valuable national resources; and, three, an environmental concern. Because of the last point, the Sierra Club called for a national commitment to eliminate all high-risk impoundments.

There are two objectives in a coal cleaning operation. One is to separate mineral matter from coal, and the other is to separate water from the cleaned coal. Availability of advanced separation technologies in these two areas would enable coal companies to recover fine coal rather than discarding it to impoundments.

Exhibit 2 shows a solid-solid separation technology developed at Virginia Tech, and installed at the same pond shown in Exhibit 1.

The coal company who took a risk in using this new technology for the first time has been rewarded handsomely.

The profit margin from the re-mining operation was substantially larger than that from mining fresh coal in deep mines. In effect, the high profit margin gained from the re-mining operation more than offset the high costs associated with deep mining operations.

Exhibit 3 shows the results of another solid-solid separation method developed at Virginia Tech. It shows that this new process can improve the removal of many different impurities from coal, such as ash, inorganic sulfur, and various trace element, including mercury.

The most difficult part of cleaning fine coal is to separate the water from cleaned coal. To solve this problem, we have been working hard for the past 6 years to develop efficient solid-liquid separation processes. I am pleased to report to you that some of these processes will be tested in operating plants as part of a research project currently funded by DOE.

The advanced separation technologies noted above need further development for commercialization. If successful, they can be used not only for cleaning fine coal, but also for producing high value mineral concentrates.

In the year 2000, the U.S. mining industry produced about \$60 billion's worth of raw materials, which made the U.S. as the largest mining country of the world.

Canada was the distant second with \$36 billion; and Australia is the third with \$28 billion.

I would like to conclude my testimony by saying that there is a need to develop advanced solid-solid and solid-liquid separation technologies for the U.S. coal industry. They can be used to produce cleaner and lower cost solid fuels for power generation. Thank you, Mr. Chairman.

[The prepared statement of Roe-Hoan Yoon follows:]

PREPARED STATEMENT OF ROE-HOAN YOON, DIRECTOR, CENTER FOR COAL AND MINERALS PROCESSING, VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Mr. Chairman and Members of the Subcommittee. I appreciate the opportunity to present my views on the need to develop advanced separation technologies for producing cleaner coal.

INTRODUCTION

In 2000, coal accounted for 56% of the electricity generated in utilities. According to Annual Energy Outlook 2001, the price of electricity should decline from 6.7 cents per kWh in 1999 to 6.0 cents per kWh in 2020. This prediction was in part based on an assumption that the coal price at the mine mouth would continue to decline by 1.4% per year due to increased productivity.

PROBLEMS

In southwest Virginia, where I live, some of the world's best coals are produced. However, the cost of producing coal increases each year, as mines go deeper underground. In addition, part of the coal mined at high cost is discarded due to the difficulty in cleaning fine coal. In industry today, run-of-the-mine coals are washed in water to remove noncombustible mineral matter from coal. The costs of cleaning the coal particles finer than 0.15 mm are substantially higher than those for cleaning coarse coal. Therefore, many companies discard them along with water to fine coal impoundments. In general, 5 to 10% of the coal mined in eastern U.S. is too fine to be cleaned efficiently, and perhaps more than one half of it is being discarded. According to a recent survey conducted by U.S. Department of Energy, approxi-

mately 2.5 to 3 billion tons of fine coal has been deposited in various impoundments. *Exhibit 1* shows a photograph of a coal slurry impoundment located in southwest Virginia.

The coal discarded in this pond represents:

- the money that the company has already spent for mining,
- a waste of valuable national resources, and
- an environmental concern.

Because of the last point, Sierra Club called for a national commitment to eliminate all high-risk impoundments.

TECHNOLOGY DEVELOPMENT

There are two objectives in a coal cleaning operation. One is to separate mineral matter from coal (solid-solid separation), and the other is to separate water from cleaned coal (solid-liquid separation or dewatering). Availability of advanced separation technologies would enable companies to recover fine coal rather than discarding it to impoundments.

a) *Solid-Solid Separation*

Exhibit 2 shows a solid-solid separation technology developed at Virginia Tech and installed at the same pond shown in *Exhibit 1*. The coal company who took a risk in using this new technology for the first time has been rewarded handsomely. The profit from the re-mining operation was substantially larger than that from mining fresh coal in deep mines. In effect, the high profit margin gained from the re-mining operation offset the high costs associated with deep mining operations.

Exhibit 3 shows the results of another solid-solid separation method developed at Virginia Tech. It shows that this new process can improve the removal of many different impurities from coal, such as ash, inorganic sulfur, and various trace elements including mercury.

b) *Solid-Liquid Separation*

The most difficult part of cleaning fine coal is separating water from cleaned coal. To solve this problem, we have been working hard for the past six years to develop efficient solid-liquid separation processes. I am please to report to you that some of these processes will be tested in operating plants as part of a research project currently funded by the U.S. Department of Energy.

CROSS-CUTTING TECHNOLOGY INITIATIVES

The advanced separation technologies noted above need further development for commercialization. If successful, they can be used not only for cleaning fine coal but also for producing high value mineral concentrates.

In 2000, the U.S. mining industry produced \$59.7 billion's worth of raw materials, which placed the U.S. the largest mining country of the world. Canada was the distant second with \$36 billion (in 1997), and Australia the third with \$27.6 billion (in 1998).

CONCLUSIONS

There is a dire need to develop advanced solid-solid and solid-liquid separation technologies for the U.S. coal industry. They can be used to produce cleaner and lower cost solid fuels for power generation.

Mr. BARTON. And now I would like to welcome Mr. Billy Jack Gregg, who is the Director of the Consumer Advocate Division of the Public Service Commission of West Virginia. Your testimony is in the record, and we would recognize you for 6 minutes to elaborate on it.

STATEMENT OF BILLY JACK GREGG, DIRECTOR CONSUMER ADVOCATE DIVISION, PUBLIC SERVICE COMMISSION OF WEST VIRGINIA

Mr. GREGG. Thank you, Mr. Chairman. May it please the committee. I am Billy Jack Gregg, Director of the Consumer Advocate Division of the Public Service Commission of West Virginia, charged with the responsibility of representing West Virginia consumers in utility proceedings in State and Federal forums.

As you all know, West Virginia has been a reliable energy source for the Nation. West Virginia is the second leading coal producing State in the Nation, mining approximately 170 million tons of coal per year. Since West Virginia became a State in 1863, we have mined and sent to national and international markets 13 billion tons of coal.

The West Virginia Geologic Survey estimates that we have remaining reserves of 53 to 54 billion tons of coal in West Virginia, approximately half of which is low sulfur coal.

West Virginia can continue to be a reliable energy source for the Nation for hundreds of years. West Virginia is also the leading electricity exporting State in the Nation. We have installed generating capacity of 14,400 megawatts of power, approximately 98 percent of which is coal based.

Each year, approximately 38 million tons of the coal consumed is consumed in West Virginia power plants, producing 90 billion kilowatt hours of electricity, and over 70 percent of this electricity is exported to other States, principally those to our east.

In fact, it is highly likely that the power generating the lights in this hearing room today was generated in West Virginia. Customers within West Virginia benefit from this coal-based power by having the ninth lowest electric rates in the Nation.

Our residential customers pay between 6 and 7 cents per kilowatt hour for a total rate. In January of 2000 the West Virginia Public Service Commission adopted a plan to restructure the electric industry in West Virginia and deregulate the generation of electricity.

Since that time over 5,000 megawatts of new capacity has been announced in West Virginia. I have shown these new plants on an attachment to my testimony. These plants represent a 37 percent increase in our existing base of capacity, and while most of this new capacity is gas-fired, there are also plants that utilize wind, as well as coal, and coal waste.

Given that most of the new and planned generating plants in the United States in the past 10 years have been gas-fired, many have despaired over the future of coal. I do not share this pessimism. If the wholesale electricity market remains open and continues to develop reliable and transparent price signals, coal will continue to play a major role in our Nation's overall electricity supply.

While we recognize that coal will be required to internalize more and more of the costs caused by the mining and burning of coal, coal will continue to enjoy a substantial price advantage over other energy sources, including gas.

Coal currently delivers for \$1 to \$1.50 per million Btu's in West Virginia. While due to increases in demand, gas now sells for \$5.30 per million Btu's. Even though it costs more and takes longer to build a coal plant, the tremendous savings in running costs make coal a cheaper alternative for base load power in almost any life-cycle cost analysis.

If coal is the cheaper alternative, why aren't more coal plants being built? There are several reasons. First, in many areas of the country there is a need for peaking capacity; capacity that runs for only a short time at the highest demands, rather than new base load capacity.

Even at current high prices gas remains particularly well suited for use in peaking facilities. Second, there is great uncertainty concerning the ultimate environmental restrictions which will be placed on coal burning generation plants.

Construction of a new coal plant already carried more risk because of the longer permitting and construction phases, and this uncertainty concerning environmental requirements translates into additional risks and additional costs.

No investor wants to sink a billion dollars into a new coal plant, only to find at the end of 7 years that additional investment is required because emission requirements have changed. Nevertheless, coal will stay and coal will come back stronger than ever.

The Energy Information Agency has recently increased its estimates of electricity demand growth in the United States from 1.7 percent per year to 2.3 percent per year. As the capacity factors of existing plants gets higher, and the underlying base demand for electricity continues to grow.

There will be a need for new base load generating plants in the future. Given a level playing field, coal will remain an attractive choice as a fuel choice for new base load generation. From a consumers point of view, the Nation will be better off if we have a wide range of generation options and let the market work out the most cost effective solution to supplying our energy needs over time.

The Congress should not mandate market outcomes, but instead should ensure that regional markets are truly open and transparent, and not subject to manipulation. The Congress, and State environmental agencies should also establish environmental rules which are stable and reliable.

This will create an atmosphere which is not only cleaner, but which is conducive to rational investment decisions. If Congress wants to encourage one type of generation over another, it should do so through research and tax policy, and not through restructuring legislation.

States, however, should be allowed great flexibility in encouraging generation portfolios appropriate for their particular regions. In West Virginia, I have taken the position that we should not distort the market by mandating purchases or establishing set asides for any type of generation.

Other States, however, may require purchases from specific types of generation. So long as regional electricity markets are truly open and communicate reliable price signals, policy mistakes by any one State should soon become apparent.

Given such a framework, I am confident that the environment will continue to improve and that consumers will pay the lowest long term price for energy in any fair market competition, and coal will continue to play a significant role in meeting our Nation's energy needs. Thank you.

[The prepared statement of Billy Jack Gregg follows:]

PREPARED STATEMENT OF BILLY JACK GREGG, DIRECTOR, CONSUMER ADVOCATE
DIVISION, PUBLIC SERVICE COMMISSION OF WEST VIRGINIA

My name is Billy Jack Gregg and I am the Director of the West Virginia Consumer Advocate Division. My office is charged with the responsibility of representing utility ratepayers in state and federal proceedings which may affect rates

for electricity, gas, telephone and water service. As part of this responsibility the Consumer Advocate Division routinely participates in fuel purchasing cases of electric utilities in West Virginia. My office is also a member of the National Association of State Consumer Advocates (NASUCA), an organization of 42 state utility consumer advocate offices from 39 states and the District of Columbia, charged by their respective state statutes with representing utility consumers before state and federal utility commissions and before state and federal courts. I greatly appreciate the opportunity to testify at this legislative hearing.

I. INTRODUCTION

First, I would like to commend Chairman Barton, the members of the Subcommittee, and your staffs for your consistent recognition throughout your careful deliberations that it is the impact of your actions on consumers of energy services that is of paramount importance. I and other members of NASUCA truly appreciate your continuing efforts to seek out the views of consumers and consumer representatives. We look forward to continuing to work with you in developing energy policies and legislation that benefit all consumers and the nation as a whole.

II. BACKGROUND

West Virginia has been a reliable energy source for the nation. West Virginia is the second leading coal-producing state in the nation, mining approximately 170 million tons of coal per year. Since West Virginia became a state in 1863, we have mined 13 billion tons of coal to supply national and international markets. The West Virginia Geologic Survey estimates that we have remaining mineable reserves of 53 to 54 billion tons, of which roughly half—23 to 24 billion tons—are low sulfur coal. With these reserves, West Virginia can continue to provide a reliable energy supply throughout the next 100 years.

West Virginia is also the leading electricity exporting state in the nation. West Virginia has installed electric generating capacity of 14,412 megawatts. Each year approximately 38 million tons of coal is consumed at West Virginia power plants, producing 90 billion kilowatt-hours of power. Over 70% of this energy is transmitted to other states, principally to our east. In fact, the lights in this hearing room today may very well be powered with electricity generated in West Virginia. Customers within West Virginia receive the advantage of our coal-based power in the form reliable service and low electric rates. West Virginia customers pay the ninth lowest electric rates in the nation, with residential rates averaging 6 to 7 cents per kilowatt-hour.

In January 2000 the West Virginia Public Service Commission adopted a plan to restructure the electric industry in West Virginia and deregulate the generation of electricity. Since that time over 5,000 megawatts of new generating capacity has been announced in West Virginia. These plants are shown on Attachment A. These new plants represent a 37% increase over our existing base of capacity. While most of this new capacity is gas-fired, there are also new plants which utilize wind as well as coal and coal waste.

III. THE FUTURE

Given that most of the new and planned generating plants in the United States in the past ten years have been gas-fired, many have despaired over the future of coal. I do not share this pessimism. If the wholesale electricity market remains open and continues to develop reliable and transparent price signals, coal will continue to play a major role in our nation's overall electricity supply. While we recognize that coal will be required to internalize more and more of the costs caused by the mining and burning of coal, coal will continue to enjoy a substantial price advantage over other energy sources, including gas. Coal currently delivers for \$1.00 to \$1.50 per million Btu's in West Virginia. Due to increases in demand, gas now sells for \$5.30 per million Btu's. Even though it costs more and takes longer to build a coal plant, the tremendous savings in running costs make coal a cheaper alternative for base load power in almost any life-cycle cost analysis.

If coal is a cheaper alternative, why aren't more coal plants being built now? There are several reasons. First, in many areas of the country, there is a need for peaking capacity—generation plants that run for only a short period, at times of peak demand—rather than new base load generation—plants that run around the clock. Even at current high prices, gas remains particularly suited for use in peaking facilities. Second, there is great uncertainty concerning the ultimate environmental restrictions which will be placed on coal-burning generation plants. Construction of a new coal plant already carries more risk because of the longer permitting and construction phases. This uncertainty concerning environmental require-

ments translates into additional risk. No investor wants to sink a billion dollars into a coal plant, only to find at the end of seven years of construction that additional investment is required because emissions requirements have changed.

Nevertheless, coal will come back. The Energy Information Agency has recently increased its estimates of electricity demand growth in the United States from 1.7% per year to 2.3% per year. As the capacity factors of existing plants gets higher and the underlying base demand for electricity continues to grow, there will be a need for new base load generating plants in the future. Given a level playing field, coal will remain an attractive choice as the fuel source for new base load generation.

IV. RECOMMENDATIONS

From a consumer's point of view, the nation will be better off if we have available a wide range of generation options, and let the market work out the most cost-effective solution to supplying our energy needs over time. The Congress should not mandate market outcomes, but should instead ensure that regional markets are truly open and transparent and not subject to manipulation. The Congress and state and federal environmental agencies should also establish environmental rules which are stable and reliable. This will create an atmosphere which is not only cleaner, but which is conducive to rational investment decisions.

If Congress wants to encourage one type of generation over another, it should do so through research and tax policy, not through restructuring legislation. However, states should be allowed great flexibility in encouraging generation portfolios appropriate for their particular regions. In West Virginia, I have taken the position that we should not distort the market by mandating purchases or establishing set-asides for any type of generation. Other states may require purchases from specific types of generation. So long as regional markets are truly open and communicate reliable price signals, policy mistakes by any one state should soon become apparent. Given such a framework, I am confident that the environment will continue to improve and that consumers will pay the lowest long-term price for energy. In any fair market competition, coal will continue to play a significant role in meeting our nation's energy needs.

New Electric Generating Plants In West Virginia
[Since January 2000]

Plant	County	Company	Size (MW)	Year in Service	Fuel Source
12 Pole Creek	Wayne	Columbia	500	2001	Gas
Big Sandy	Wayne	Constellation	300	2001	Gas
Culloden	Cabell	Panda	1,100	2003	Gas
Pleasants	Pleasants	Dominion	335	2002	Gas
Polecat Hollow	Pleasants	Cogentrix	1,100	2004	Gas
Graysville	Marshall	Cogentrix	810	2003	Gas
Cameron	Marshall	Cogentrix	810	2003	Gas
Backbone Mtn	Tucker	Atlantic Renew ..	90	2001	Wind
Horseshoe Run	Preston	Megaenergy	10	2001	Gas
Middle Fork	Barbour	Anker Energy	300*		Coal/Gob
TOTAL			5,355		
EXISTING GENERATION			14,412		
INCREASE			37%		

* Has not yet filed for certificate.

Mr. BARTON. Thank you, Mr. Gregg.

We now would like to hear from Mr. Armond Cohen, who is the Executive Director of the Clean Air Task Force. Your statement is in the record, and we would ask that you summarize it in 6 minutes. Welcome.

STATEMENT OF ARMOND COHEN, EXECUTIVE DIRECTOR, CLEAN AIR TASK FORCE

Mr. COHEN. Thank you very much, Mr. Chairman, and members of the committee. The Clean Air Task Force, just by way of intro-

duction, works with groups throughout the United States, concentrated in the midwest and the southeast—Illinois, Ohio, Virginia, other places, North Carolina, Georgia.

We have very strong relationships with environmental groups in those States that are working on this issue of how to reconcile energy production for fossil fuels and environmental cleanliness. On the national level, we work with a coalition called “Clear the Air,” which includes the National Environment Trust, and the United States Public Interest Research Group, and we work in cooperation with Environmental Defense, Natural Resources Defense Council, and others.

However, today, mostly because of the limitations of time, I am speaking on behalf of the task force alone. I am here with a message that may surprise you a little bit. I believe and I agree with the members of this panel that coal-fired electric production is likely to remain a very significant part of the Nation’s electric generating supply in the coming decades.

What I do want to do though is underscore that in order for that to happen that we are going to need to shrink the environmental footprint of this energy source significantly, and that is due to a lot of scientific evidence, as well as technology improvements in the last decade.

There has been a lot of science since the last round of amendments to the Clean Air Act. First in the area of fine particulate from coal-fired energy. A study was put out late last year indicated that as you look across the Nation about 30,000 premature deaths per year can be attributed to fine particulate matter from coal-fired energy plants.

Interestingly, if you look at the pattern of distribution—and this is in the testimony that I submitted—you will see that the impacts are really more densely concentrated in the midwest and the southeast, as opposed to the northeast.

And Mr. Yoon made the point earlier about drift into the northeast. The reality of coal-fired energy health impacts is that they are dominantly concentrated where the coal-fired energy is, and that is in those regions. You also see that States like—in fact, coal mining States like West Virginia, Kentucky, Virginia, Tennessee, Alabama, dominate the rankings of deaths per hundred-thousand citizens from coal-fired energy emissions.

In addition, a study put out in late 1999 indicated that about 6 million asthma attacks per year, 200,000 emergency room and hospital admissions, come from ozone smog. About a quarter of that toll is due to coal and other fossil-fired energy plants.

If you look at ecological effects, we have seen a significant amount of research on acid rain, on nitrogen saturation of soils. There is a lot of research that has come out in the last decade indicating that while we have made some improvements in the acid rain emissions from the power sector, the ecosystems of the southeast and the northeast are still very much in trouble, and recovery is going to be substantially delayed without significant additional cuts in sulfur dioxide from the power generating sector.

Visibility in our national parks is appalling. It is about 20 percent of natural background levels. Parks like the Shenandoah, the Great Smokey Mountains; where you could see 80 or 90 miles on

an average summer day 30 or 40 years ago, now you are down to maybe 8 or 9, 10, 12 miles.

This has been documented to be very closely linked to at least half of those effects to coal-fired energy emissions, particularly fine particulate matter. Mercury is another pollutant of concern. A recent report from the Center for Disease Control earlier this month indicated that about 6 million women nationally have elevated levels of mercury in their blood that are above EPA's safe reference dose.

We have talked about climate change a little bit, and it just does bear mentioning that the power sector is the big actor in that area, accounting for about 40 percent of domestic CO₂ emissions.

Now that's the bad news. The good news is that we do have the technologies to move on a number of these fronts. The last decade-and-a-half has shown an increasing availability of, and commercialization, and lowering costs of pollution control devices to reduce NO_x, to reduce SO₂.

There have been demonstrations of mercury reduction technologies. Every day there seems to be in the trade press another announcement of another technological breakthrough.

CO₂ is clearly going to be more difficult. It probably in the near term will require some reduced reliance on coal. Over the long term, however, it does appear that many of the technologies that Dr. Yoon spoke of appear to be promising and separation of CO₂ from the feed stock may be feasible within the next decade to decade-and-a-half.

My message to you really is that there really is the need to move forward. If we are going to move forward, let's burn it cleanly. Let's also align our national policy in a way that allows utilities like Mr. Abdoo's to move forward to plan.

In recent months, in the last year, you have seen a lot of moment at the State level. In States like Illinois, for example—and in fact in cooperation with the local UMW—we have seen proposals to reduce emissions from local power plants significantly.

In Texas, Governor Bush in 1999 signed a State bill that would have shrunk the NO_x and the SO₂ emissions of East Texas plants significantly. We are seeing similar movement in New Hampshire, New York, Massachusetts, Connecticut. This is moving at the State level, and we have also seen Senator Smith on the Senate side take lead on this issue, although I understand that CO₂ is the controversy of the day.

There is broad commitment and support it seems from the administration to move forward a coordinated policy. So my message to you really is that I think we can do this. I think if we can come together around a common set of timeframes and targets, we can have coal as part of the U.S. generating mix, and we can preserve jobs, but we can also have a much cleaner environment, which we desperately need. Thank you very much.

[The prepared statement of Armond Cohen follows:]

PREPARED STATEMENT OF ARMOND COHEN, EXECUTIVE DIRECTOR, CLEAN AIR TASK
FORCE

INTRODUCTION

Mr. Chairman, and Members of the Subcommittee: My name is Armond Cohen, and I am Executive Director of the Clean Air Task Force, or CATF. I appreciate the opportunity to testify before you today.

CATF is a national environmental organization that works at the state and federal level in the courts, agencies and other venues to advocate policies to reduce air pollution. At the state level, we work with state environmental and public health organizations and state officials; at the national environmental level we also work as part of "Clear the Air," a campaign aiming a reform of federal power plant emissions policy, and with other national environmental organizations such as Environmental Defense, Natural Resources Defense Council and others. Today, however, due to the hearing schedule, I offer testimony on behalf of CATF alone.

SCOPE OF TESTIMONY

Today's hearing focuses on coal as part of the nation's energy policy. My testimony will focus more specifically on what environmental concerns must be considered as part of coal's future role in the nation's electric generation, and will recommend policies to address those concerns. My testimony will address, in order:

- Recent scientific evidence supporting additional air emissions and solid waste controls on coal fired power plants;
- Technology and market changes in the last decade that suggest these controls are becoming increasingly feasible and cost-effective;
- Problems in the current *structure* of environmental regulation of coal fired power plants, and how those problems might be addressed in the context of improved emission controls; and
- The emerging state and federal bipartisan consensus that this should be done.

RECENT SCIENTIFIC EVIDENCE ON COAL PLANT AIR EMISSIONS

Since the enactment of the 1990 Clean Air Act Amendments, an array of scientific evidence has emerged to support significantly lower emission limits in the nation's coal-fired power plants. This body of work includes the following:

- **Fine particulate matter.** A succession of studies during the 1990s, starting with work out of Brigham Young University, began to link so-called ultrafine particulate matter with premature death and a range of other sub-lethal but negative health impacts. This body of work underlay EPA's 1997 fine particulate standard that was recently upheld by the U.S. Supreme Court. More recently, studies have focussed on the relationship of fine particulate matter impacts to fossil-fired electric plants specifically. The Harvard School of Public Health, for example, in two recent studies, found hundreds of annual deaths per year linked to coal fired plants in Massachusetts and Illinois due to fine particulate matter, and significant sub-lethal impacts leading to asthma attacks and respiratory hospitalizations.

On a national scale, Abt Associates¹ recently found that more than 30,000 premature deaths per year are caused by fine particulate precursor emissions from coal- and oil fired power plants, as well as 27,000 emergency room visits and hospitalizations, 600,000 asthma attacks and an astonishing 5.1 million lost work days per year. Notably, the densest concentration of particulate related health impacts was not in the Northeast U.S.—which has typically been the more vocal complainant in national air pollution policy debates—but in the Midwest and Southeastern U.S., where the bulk of the nation's coal fired electric generation is located. For example, cities in Alabama, Tennessee, Virginia, Kentucky and West Virginia dominated the rankings of coal plant-related death tolls per 100,000 residents.

Another issue raised by these studies is that mortality and morbidity impacts are related to distance for coal plant smokestacks. The Harvard Massachusetts study I referred to above, for example, found that about 30% of the mortality risk associated with the studied plants fell within 35 miles of the plant. These findings will influence how we design future emission trading policies for this sector.

- **Ozone smog.** During the last decade, scientists have also begun to further understand the far reaching health effects of ozone smog, and its spatial relationship

¹ Abt Associates, *The Particulate-Related health Benefits of Reducing Power Plant Emissions* (October 2000).

to power plants. A study by Abt Associates in 1999², for example, found that in the Central, Southern and eastern U.S., ozone smog was responsible each year for more than 150,000 emergency room visits and hospitalizations, as well as more than 6 million asthma attacks. Fossil-fired power plants account for about 25% of ozone smog precursor emissions—although a greater proportion in the Midwest's lower Ohio Valley. As with fine particulate matter, ozone smog emissions from power plants do their greatest damage close to the source; one study last year by a researcher at the Harvard School of Planetary and Earth Sciences demonstrated that ozone smog exposure in the Ohio Valley is often worse than similar exposures in the Northeast, due largely to the dense concentration of coal-fired power plants in the area.³

• **Acid rain.** From Canada through the Southeastern US, there is increasing evidence in the last decade that points to the need for at least a 75 percent sulfur cut beyond current Clean Air Act requirements to support recovery from sulfur damage. In one sense, the 1990 Clean Air Act Amendments have been successful: sulfur cuts to date have resulted in less sulfate in precipitation. But these cuts have not been deep enough for acidity levels in sensitive water bodies to return to levels that can fully support recovery of aquatic life and allow soils to recover from loss of base cation nutrients.

To illustrate:

- Sensitive watersheds in **central Ontario and Quebec** have not responded to reductions in sulfate deposition. At the current sulfur deposition levels, roughly 95,000 lakes will continue to be damaged by acid deposition. Atlantic salmon in Nova Scotia have become extinct in 14 rivers and severely impacted in 20 rivers. In Quebec, studies have shown the nutrient status of sugar maple seedlings declined as soil acidification levels and soil base saturation decreased. At current deposition levels, these effects will likely be sustained or increased causing reduction in nutrient uptake and decline in forest ecosystem productivity. Additionally, exposure to precipitation with low pH prevents germination of pollen in white and mountain paper birch. It also reduces a tree's frost hardiness. To reverse and recover from acidic deposition impacts, Canadians in the Acidifying Emissions Task Group have recommended a 75 percent reduction in US sulfur emissions from current Clean Air Act levels.
- Similarly, in **New York**, the combination of site sensitivity and high levels of acidic deposition makes the Adirondacks and Catskills the most sensitive regions to acid inputs in the U.S. Forty-one percent of Adirondack lakes are either chronically or episodically acidic. Here, despite reductions in sulfur dioxide emissions and sulfate deposition, water quality at affected lakes and streams continues to be a problem; there has been no improvement in the ability of these waters to neutralize acids. Indeed, concentrations of aluminum in Adirondack waters are increasing, with toxic effects: nearly 25 percent of surveyed lakes in the Adirondacks do not support any fish.
- **Western Pennsylvania** receives some of the highest levels of sulfur deposition in the U.S. and as a result suffers from ecological problems associated with acidic deposition, such as poor seedling regeneration of sugar maples and red oaks on forested sites throughout the region; deterioration of tree health and excessive mortality of mature sugar maples and red oaks; and loss of fish species and species diversity in streams.
- The **West Virginia** Department of Natural Resources has identified hundreds of miles of streams that are chronically acidic and is currently liming 60 streams to offset the damage from acidic deposition.
- The **Virginia** Trout Stream study with 13 years of data on 60 streams predicts that even cuts of 40-50 percent beyond Clean Air Act will not support recovery of chronically acidic streams and will cause transitional streams to worsen. According to the study, the predominant trend in stream acid neutralizing capacity over the past 12 years has been downward, indicating continuing acidification. Two different models indicate sulfate deposition reductions greater than 70% are needed to prevent additional stream alkalinity reductions and brook trout stream losses in Virginia.
- In the **Great Smoky Mountains National Park**, streams are experiencing chronic and episodic acidification caused, in a large part, by acidic deposition. Acidic deposition is also causing forest ecosystems to experience chemical imbalances that contribute to tree stress. Two separate ecosystem models concur that SO₄ reductions of 70% are needed to prevent acidification impacts from increas-

²Abt Associates, *Adverse Health Effects Associated with Ozone In the Eastern United States* (October 1999).

³Ohio Environmental Council, *Ohio Valley: Ozone Alley* (February 2000).

ing in the Great Smokies' ecosystems. Deposition reductions beyond are needed to improve degraded aquatic and terrestrial ecosystems.

- Overall, in the **Southeast**, the chronic loading of sulfate and nitrate has made already Calcium-deficient soils in the region more Calcium-deficient. Analyses at forest sites in the region suggest that within 80 to 150 years, soil calcium reserves will be inadequate supply the nutrients to support the growth of merchantable timber.

- **Visibility and haze.** Our national parks and wilderness areas have suffered significant declines in visibility in the last several decades. Regional haze has reduced annual average visibility in these areas to about one third of their natural levels in the West, and to one quarter of their natural levels in the East. For example, the average natural visual range in Virginia's Shenandoah National Park and in the Great Smoky Mountains of Tennessee and North Carolina is about 80-90 miles, while average summertime visibility has been reduced to a paltry 12 miles.⁴ This pervasive haze makes the park and wilderness experience far less attractive and enjoyable to the 287 million people who visit these areas annually. A recent study indicates that visibility damage to our national parks, based on surveys of visitors, can be estimated at \$4.3 billion dollars per year.⁵

The last decade of research has also shown the link between haze and power plant sulfate more clearly. Recent light extinction studies by Colorado State University, for example, have shown that on poor visibility days in Eastern parks, *power plant sulfate emissions account for roughly half of total park visibility losses*.⁶ Importantly, this research has also shown that visibility increases geometrically at higher levels of fine particulate reduction—in other words, deeper power plant cuts will yield disproportionately longer vistas in the parks.

- **Toxic emissions.** Coal- and oil-fired power plants are responsible for a wide array of toxic air emissions, including, most notably, mercury, as well as other metals such as arsenic and beryllium; and acid gasses such as hydrochloric acid and hydrogen sulfate. All of these substances have known toxic, neurotoxic or carcinogenic effects.

In September of last year, a committee of the National Academy of Sciences estimated that over 60,000 children are born each year at risk for adverse neurodevelopmental effects due to in utero exposure to methylmercury.⁷ These children will likely have to struggle to keep up in school and might require remedial classes or special education. As noted below, however, and in an attachment to this testimony, there is some indication that mercury and other toxic emissions may be significantly controlled as a co-benefit from controlling nitrogen and sulfur emissions that contribute to fine particulate deaths, ozone smog, acid rain, and haze.

- **Climate change.** The nation's power plant fleet accounts for approximately 40% of the nation's man-made CO₂ emissions. In addition, recent research has pointed to the role of tropospheric ozone, another by-product of coal combustion, in climate change.⁸ While the debate over climate change science will no doubt continue, it has narrowed substantially with the latest IPCC report. Many policy-makers have increasingly concluded that some initial steps toward greenhouse gas emission control is the prudent course. Many utilities have concluded, in any event, that some policy action is inevitable.

- **Fossil fuel combustion waste.** Combustion wastes are the solid and liquid waste left over from burning coal and oil to make electricity—ash, sludge, boiler slag, mixed together with a dozen or so smaller volume wastes. Every year, over 100 million tons of these wastes are produced at nearly 600 coal- and oil-fired power plants. Seventy six million tons are primarily disposed of at the power plant site in unlined and unmonitored wastewater lagoons, landfills and mines. These wastes are highly toxic, containing concentrated levels of contaminants like arsenic, mercury, chromium and cadmium that can damage the nervous systems and other organs, especially in children. Analyses performed for EPA show that some of these pollutants will eventually migrate and contaminate nearby groundwater—in some cases posing cancer risks thousands of times higher than EPA's standard risk thresholds.

⁴Clean Air Task Force, *Out of Sight: Haze in Our National Parks* (September 2000)

⁵Note 4, above.

⁶Malm, William C., *Spatial and Seasonal patterns and temporal Visibility of Haze and its Constituents in the United States*, Colorado State University, Fort Collins, CO (May 2000).

⁷Toxicological Effects of Methylmercury, National Academy Press, Washington, DC, 2000. <http://www.nap.edu>

⁸James Hansen et al., *Global warming in the twenty-first century: An alternative scenario*, NAAS Proceedings, August 2000.

Despite these high toxic risks, there is no direct federal regulation of these wastes; they were exempted from such regulation by Congress, leaving it up to EPA to decide. Last year, EPA declined to directly regulate these wastes. Instead, these disposal units are operating under state rules that are frequently less protective than those applying to household trash.⁹

Technological and market changes. At the same time as we have expanded our knowledge of the environmental impacts of coal fired generation, the last decade has also brought increased demonstration of the efficacy and cost-effectiveness of emission controls and alternative combustion technologies that could reduce these impacts. Key developments include:

- Commercial demonstration of sulfur dioxide scrubbing.
- Commercial demonstration of selective catalytic reduction and selective non-catalytic reduction to control nitrogen oxides.
- Development of hybrid control technologies such as Powerspan that are promised to control nitrogen, sulfur and mercury emissions.
- Initial demonstration of sorbent injection technologies to control mercury emissions.
- Initial indications, from EPA data, that sulfur and nitrogen controls, combined with particulate controls, may result in up to 90% removal of mercury from flue gasses. In addition, it appears that acid gasses such as hydrochloric acid are also effectively removed from flue gas with wet scrubbing.
- Advances in the efficiency of natural gas combined cycle generation.
- Increased attention to and optimism concerning the possibility of CO₂ separation and sequestration in the process of advanced coal gassification.¹⁰

All of these developments make it feasible to contemplate significant reductions from the nation's fossil power plant fleet in the coming years, at increasingly lower costs.

Indeed, as the chart attached indicates, existing coal boilers licensable today are roughly four times cleaner than older coal plants for sulfur and nitrogen. The minimum foundation of any federal power plant emissions policy must be the eventual "de-grandfathering" these older plants—making them meet modern emissions requirements.

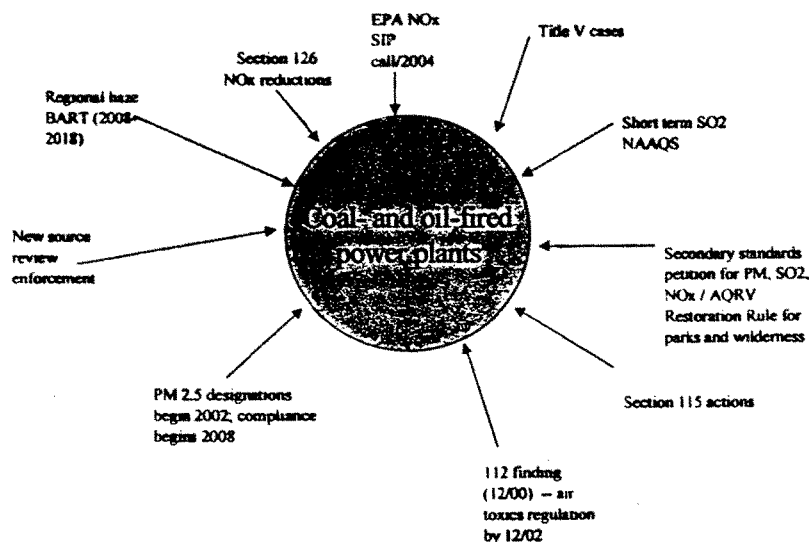
A COMPREHENSIVE APPROACH TO EMISSIONS REDUCTIONS

All of the above environmental imperatives must be addressed. Indeed, in piecemeal fashion, many of them are already being addressed by the current regulatory structure. However, that structure leaves much to be desired. For example, by fragmenting emissions control of nitrogen and sulfur under more than dozen programs, each with different goals, time frames, standards and litigation opportunities, the current structure both delays needed emission cuts and produces uncertainty and inefficiency for the owners of coal-fired generation, who find it difficult what plants to retrofit, which to retire, which to run less, and which to build, and when. The following diagram illustrates some of the overlap and conflict in the present scheme:

⁹Citizens Coal Council and Clean Air Task Force, *Laid to Waste* (February 2000).

¹⁰See, e.g., U.S.D.O.E., *Vision 21 Program Plan: Clean Energy Plants for the 21st Century*, April 1999.

Current Clean Air Act Provisions Affecting Power Plants



The solution is clear, and has been widely discussed: federal legislation creating aggressive, comprehensive, hard-wired emissions targets for all four of the key emissions from power plants—sulfur, nitrogen, mercury, and carbon dioxide. As part of such legislation, industry has called for “safe harbors” from certain further actions by EPA under existing agency authority to provide a stable investment horizon to generation owners.

AN IDEA WHOSE TIME HAS COME

Leaders of both major parties at the state and federal level have increasingly embraced this idea of comprehensive power plant emissions control policy.

At the state level, the following developments have occurred:

- **Texas:** In 1999, then-Governor Bush signed into law an electric market competition bill that required previously “grandfathered” East Texas generating units to reach tight nitrogen oxide emission standards equivalent to those met by new plants built today, and that required 25% reductions in sulfur dioxide beyond current federal law.
- **Illinois and other Midwest States:** Last week, state legislators of both parties in the Great Lakes states announced they would soon propose comprehensive, multi-emission power plant legislation. In Minnesota and Illinois, such legislation has been seriously debated in the last year and may well be enacted in this session.
- **New Hampshire:** Governor Shaheen and New Hampshire Republican leadership have jointly proposed power plant cuts of all four key emissions, including a reduction in state power sector CO₂ to 7% below 1990 levels.
- **Connecticut:** Governor Rowland has issued an Executive Order requiring nitrogen and sulfur emission cuts in state power plants, with emissions credit trading limited by discounting the value of out-of-state credits obtained. The Connecticut legislature is presently considering even steeper cuts.
- **Massachusetts:** Governor Paul Cellucci has proposed new rules to require coordinated emissions cuts of nitrogen, sulfur and CO₂ from the state’s power plants, with minimum on-site emissions reductions required as a predicate to allowing emissions trading; issuance of the rules is imminent.
- **New York:** Governor Pataki has pledged cuts in New York power plant sulfur and nitrogen emissions of at least 50%, and the state environmental agency is

reportedly considering including cuts of mercury and CO₂ in proposed rules as well.

Movement on this issue outside the Beltway—and especially in the Midwest and Southeast—should not be surprising. As discussed earlier, the wide-ranging environmental and health impacts of power plant emissions are often felt most severely in those regions. And, as the many Midwestern editorials and news stories attached to this testimony indicate, opinion leaders in those states are beginning to understand the local impacts of coal-fired plants, and are demanding action.

At the federal level, convergence on the wisdom of comprehensive power plant emissions control legislation has been equally widespread. President Bush promised to propose such legislation during his campaign, and reaffirmed his support in the budget sent to Congress. In recent weeks, EPA Administrator Whitman has affirmed this Administration's commitment to enact such legislation. Senator Smith has also pledged to develop and introduce such legislation with his Senate colleagues. And it is likely that, on the House side, there will again be introduced bipartisan legislation to control power plant emissions.

And key coal-fired plant owners have supported comprehensive legislation as well. Last May, in hearings before the Senate Environment and Public Works Committee, Cinergy CEO Jim Rogers and New Century (now Xcel) CEO Wayne Brunetti spoke in favor of this approach as way of providing certainty for future investments.

Comprehensive emissions control for the power sector is clearly an idea whose time has come.

CONCLUSION

Returning to the theme of this hearing—the future of coal-fired generation in the nation's energy policy—let me conclude with a headline taken from an editorial in the Akron Beacon Journal earlier this year, included as an attachment to this testimony:

"The lesson after 30 years? Pollution controls and coal-fired power plants have a future together."

The converse is also true, however: without aggressive and comprehensive power plant pollution targets, the future is grim, indeed: for our children, for our communities, for our natural environment, and for owners of coal assets themselves. We have the knowledge of why to clean up. We have the technical means. We simply must summon the will to make this important step forward.

I thank you for your attention and look forward to your questions.

Mr. BARTON. Thank you, Mr. Cohen, and I would agree with what you said, that we can do this. So we are in agreement and we appreciate your testimony. Our last, but not our least, witness is Mr. Edwin Pinero, who is the Director of Program Operations for the Pennsylvania Department of Environmental Protection, Office of Pollution and Compliance Assistance, in Harrisburg, Pennsylvania.

That is the longest title I think of the year. So I would love to see your business card. It is probably about 6 inches long. Welcome. Your testimony is in the record, and I would ask you to elaborate on it for about 6 minutes.

STATEMENT OF EDWIN PINERO, DIRECTOR OF PROGRAM OPERATIONS, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF POLLUTION AND COMPLIANCE ASSISTANCE

Mr. PINERO. Good afternoon, Mr. Chairman and members of the subcommittee. Actually, my title is so long I actually have two business cards that I carry around. Again, my name is Edwin Pinero, and I am the Director of the Bureau of Environmental Sustainability in the Pennsylvania Department of Environmental Protection, and I am also the Director of State Energy Programs.

I am also a board member of the National Association of State Energy Officials or NASEO. NASEO represents 49 States, territories, and the District of Columbia on energy matters. I am hon-

ored for the opportunity to be here representing the Commonwealth of Pennsylvania and NASEO, at this discussion of national energy policy, and specifically the role of coal and other energy sources in such policy.

The systematic approach that the committee is taking toward developing energy policy is to be applauded. Coal has paid an integral part in Pennsylvania's growth and economic history. Currently, approximately 60 percent of the power generated in Pennsylvania comes from coal.

Nationally, coal accounts for over 50 percent of the electricity generation, and will remain a key part of the energy picture for the foreseeable future. But other sources of energy make up our energy portfolio as well. Natural gas, nuclear, hydroelectric, wind, solar, and geothermal all generate electricity, along with fuel oil, propane, and natural gas as residential heating fuel.

This diversity provides for options in times of shortages and high prices, and reduces the dependency and associated risks that come with relying on any one source of energy.

Let's briefly discuss the connection of energy policy to environmental policy. As implied by my title, or titles, in Pennsylvania, we see a strong relation between energy and the environment. And in 1995, we merged our energy office into our Office of Environmental Protection.

We felt that it was neither practical nor prudent to talk of energy without considering the environmental implications. Now, in the interest of time, I am not going to discuss a lot of the very innovative programs that we are doing in Pennsylvania.

I will refer you to the written testimony and I will be happy to answer questions about it at the end, and maybe with time permitting I might cover a couple of those examples.

We are actively participating in a variety of national initiatives and activities where environment and energy policymakers are coming together. In addition to bringing together the State Agencies, NASEO, the Environmental Council of States, the National Association of Regulatory Utility Commissioners, the State Territorial Air Pollution Program Administrators, and Association of Local Pollution Control Officials, and air quality directors are all coming together to share their ideas and develop integrated solutions for energy in the environment.

The recent meetings of these groups in St. Louis was representative of the potential for cooperation. Also, the United States Environmental Protection Agency, the United States Department of Energy, the National Governor's Association, and the National Conference of State Legislators, are all organizations that States, including Pennsylvania, are working with to develop comprehensive strategies and approaches.

We are also trying to develop pilot program in individual States and regions. In other States, such as in New Jersey, and as Mr. Abdoo of Wisconsin Electric mentioned in Wisconsin, agencies have taken a flexible approach to looking to achieve results, while not necessarily concerned with the specific means.

And we are continuing in this effort, which is being conducted on a non-partisan basis. A comprehensive and flexible national energy policy will allow States and regions to develop unique and appro-

priate strategies that will capitalize on the unique variations across the Nation.

Pennsylvania is working closely with other States in our own region, as well as our colleagues across the Nation, to leverage experience and ideas, and because so many States use energy program fundings to carry out these program, a clear and consistent linkage between energy policy and energy budgets is prudent, and will ensure success in meeting State and national goals.

In late year 2000, our Governor, Tom Ridge, created the multi-agency energy task force, bringing together the many Commonwealth Agencies that interact on energy related issues, so we could work together and strategically help shape Pennsylvania's energy strategy and policy, and align our activities and overall goals.

In summary, I trust that these brief comments and more detailed written testimony, show that we strongly believe that a sound energy policy needs to recognize the importance of a comprehensive and flexible national policy; clear and consistent linkages between budget and policy, a diverse portfolio of energy sources, realizing the important of both the supply side and demand side.

And the need to work together on developing, testing, and applying new and innovate ideas. And let me just share with you a couple of idea. And let me just share with you a couple of examples of what we were doing in Pennsylvania to show the successes of this strategy and working together.

In 1999 alone, we reclaimed over 6,000 acres of abandoned mine land. The scrub grass generating company is using an innovative technology burning waste coal material for electricity, and at the same time with advanced air pollution control equipment, reducing 146 tons of nitric oxide per ozone season.

Over the last 3 years, 175 winners of our Governors environmental excellence award through energy efficiency and renewable energy technology shave reduced 56 million kilowatt hours of electricity usage.

In 1990's, greater than 99 percent of sites permitted for coal mining had no post-mining discharge problem. And finally the Edison Mission Energy Company has just invested \$200,000 on air pollution control equipment to upgrade coal burning facilities in the Eastern part of Pennsylvania.

I thank you for your time and attention and the opportunity to share these thoughts with you, and I would be happy to answer any questions you may have. Thank you.

[The prepared statement of Edwin Pinero follows:]

PREPARED STATEMENT OF EDWIN PINERO, DIRECTOR, BUREAU OF ENVIRONMENTAL SUSTAINABILITY, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Good afternoon. My name is Edwin Pinero and I am the Director of the Bureau of Environmental Sustainability in the Pennsylvania Department of Environmental Protection, and a Board Member of the National Association of State Energy Officials.

NASEO represents 49 states, territories, and the District of Columbia on energy matters.

I am honored for the opportunity to be here representing the Commonwealth of Pennsylvania and NASEO at this discussion of national energy policy, and specifically the role of coal and other energy sources in such policy. The systematic approach that the committee is taking towards developing energy policy is to be applauded.

Coal has played an integral role in Pennsylvania's growth and economic history. Currently, approximately 60 percent of the power generated in Pennsylvania comes from coal. In addition, coal helped power the industrial revolution, including the steel industry, so prominent in our Commonwealth's history.

Nationally, coal accounts for over 50 percent of electricity generation, and will remain a key part of the energy picture for the foreseeable future. But other sources of energy make up our energy portfolio—nuclear power, hydroelectric, wind, solar, and geothermal to generate electricity along with fuel oil, propane, and natural gas as residential heating fuels.

This diversity provides for options in times of shortages and high prices, and reduces the dependency and associated risks that come with relying on any one source of energy.

Although abundant, coal is a finite natural resource that must be used wisely and in conjunction with other energy sources so that it is consumed at a reasonable, sustainable rate. We also use other finite resources for energy, such as petroleum products, including natural gas. Currently, there are plans for new smaller scale power plants in Pennsylvania that will use natural gas. We must approach these as well with the mindset of optimal consumption rates.

One way to optimize the rate of consumption of these finite resources is to introduce a mix of renewable energy sources, or those that are not depleted with use. These include hydroelectric energy, solar energy, wind energy, and geothermal energy. However, these renewable energy sources are relatively new arrivals on the energy market scene, and commercialization and technology development costs can make them too expensive for the average American.

National and state energy policy can provide for the introduction and demonstration of these other sources so with time they become an integral part of the market. In Pennsylvania we have several projects and initiatives underway to demonstrate the value and applicability of these technologies.

One of the largest wind farms in the east is in western Pennsylvania and several others are under construction or are planned. We have numerous schools and other commercial buildings that utilize ground source heat exchange for heating and cooling, and solar energy applications are seen in many places in the Commonwealth.

Through Gov. Tom Ridge's Green Government Council, we intend to set an example of leadership by improving the way government does business.

We have applied solar and geothermal technology, along with overall green building design at our newest district mining office in Cambria County in Western Pennsylvania. In addition, we now have a procurement requirement of a five percent environmentally preferable energy component to our Commonwealth power purchases.

The rate, at which we use coal, and any other energy source, is a function of both supply side and demand side management. Our utility infrastructure generates energy and distributes the energy to the users.

Energy policy needs to provide for the supply side infrastructure to be able to have the fuel sources needed to generate the energy, and the mechanisms to deliver the energy. Pennsylvania is characterized by a network of power generation using a suite of energy sources such as coal, nuclear and hydroelectric, supported by a nationally recognized transmission and distribution system. As a result, Pennsylvania has a strong energy base and is actually a net exporter of electricity.

But demand side issues are equally important in the energy policy picture. It is the amount of energy that we need, the demand, that drives how much energy must be produced. The best way to address demand side issues is to educate and support the public on the value of energy conservation, energy efficiency, and distributed generation, or the ability of the end user to generate their own energy.

State and national energy policy can provide the framework for the outreach and catalyzing of the energy efficiency movement. We have realized in Pennsylvania a heightened awareness and interest by our general population on the subject of saving energy and helping to reduce costs.

Using the State Energy Program funding and our own funds, we are working closely with schools to not only implement energy saving measures, but to start the education process early, in the K to 12 environment, to instill the concept of energy efficiency as a way of life.

We apply a great deal of our energy related funding to this outreach and education effort. This effort includes use of the media, highlighted last year by the Emmy Award-winning "GreenWorks for Pennsylvania" television series, which includes segments on energy efficiency, and the GreenWorks Gazette newspaper insert.

These outreach efforts are bearing fruit. Over the last three years, the winners of the Governor's Award for Environmental Excellence Awards—175 organizations in all—collectively saved more than 56 million kilowatt hours of energy.

We also help those in need to first realize safety and an improved standard of living through use of Low Income Home Energy Assistance Program or LIHEAP and Weatherization funding.

Let's briefly discuss the connection of energy policy to environmental policy.

As implied by my title, in Pennsylvania we see a strong relation between energy and the environment, and we have merged our energy office into our department of environmental protection. It is neither practical nor prudent to talk of energy without considering the environmental implications.

Energy use includes the use of non-renewable natural resources and the emissions of solid waste, wastewater, and air emissions. Clearly then, any policy that integrates energy and environment, will be able to relate saving in energy use through efficiency, conservation, and renewables, as not only increasing energy stability and reasonable costs, but also reduced impacts to the environment. In that light, Pennsylvania implements a strategy that considers environmental impact of energy decisions.

We are actively participating in a variety of national initiatives and activities where environment and energy policy makers are coming together. In addition to bringing together state agencies, NASEO, the Environmental Council of States or ECOS, and the National Association of Regulatory Utility Commissioners or NARUC, the State Territorial Air pollution Program Administrators/Association of Local Pollution Control Officials-Air Quality Directors (STAPPA/LAPCO) are coming together to share ideas and develop integrated solutions.

The recent meeting of these groups in St. Louis was representative of the potential for cooperation. U.S. Environmental Protection Agency, U.S. Department of Energy, the National Governors Association, and the National Conference of State Legislatures are also organizations that states, including Pennsylvania, are working with to develop comprehensive strategies and approaches. We are trying to develop pilot programs in individual states and regions.

In other states, such as New Jersey and Wisconsin, agencies have taken flexible approaches looking to achieve results, while not necessarily as concerned with the specific means. We are continuing this effort, which is being conducted on a non-partisan basis.

We do realize that using coal results in environmental impacts. However, it is unrealistic to expect that coal will not be part of our economy and energy picture for the foreseeable future. Therefore, the public and private sector must work very hard to find ways to utilize coal and other fuel sources while at the same time reducing the related environmental impacts.

National plans to invest in clean coal technologies to improve efficiency and reduce environmental impact is a promising strategy that we look forward to hearing more about and providing input.

From a regulatory standpoint, state and federal clean air laws affect coal use by addressing emissions of gases released in coal combustion. The Pennsylvania Clean Streams Law and federal Clean Water Act address water pollution from mining operations known as acid mine drainage. Finally, mining and solid waste laws address operations, and handling and disposal of mining materials and post-combustion materials such as ash from power plants.

We are proud to say that in Pennsylvania this commitment to environmental protection has been very successful. Through the Governor's ReclaimPA and Growing Greener Initiatives, we are working on reclaiming many acres of abandoned mine lands for future use.

The goal of ReclaimPA is to further increase reclamation of our abandoned mineral extraction sites. Since Gov. Ridge announced ReclaimPA in October 1998, we have made great progress by encouraging volunteer involvement and providing incentives for re-mining, which continues to be the most effective means of reclamation.

And since the inception of ReclaimPA, reclamation has steadily increased.

In 1997, approximately 4,500 acres were reclaimed through re-mining operations and government-funded projects. The number of acres reclaimed in 1999 rose to nearly 6,000. Through the further implementation of ReclaimPA program initiatives, the numbers will continue to rise.—

With the passage of the "Growing Greener" Program in December 1999, we reached another historic milestone in this effort. The nearly \$650 million it makes available over five years includes funding for abandoned mine and oil and gas well reclamation.

In the last year alone, more than \$170 million in Growing Greener projects were funded—\$80 million with state funds and another \$90 million from other project partners.

These Growing Greener projects will clean up 389 miles of streams, restore 4,079 acres of wetlands and plant 137 miles of streamside buffers. And 5,226 acres of abandoned mine land will be reclaimed and 472 oil and gas wells will be plugged by watershed groups, DEP and mine operators.

The philosophies of ReclaimPA—partnerships, new technology, expanding financial resources—are captured in “Growing Greener.” Pennsylvania also looks to innovative use of waste coal materials.

Scrubgrass Generating Company is generating electricity from waste bituminous coal, including using innovative burning and air pollution control devices. Not only do they put waste coal material to use, but they are reducing air emissions through cleaner burning, including 146 tons of nitrous oxide reductions per ozone season. Another facility on Schuylkill County is converting waste refuse piles from coal operations to diesel fuel. We also have a successful history of addressing acid mine drainage.

Due to advances in acid mine drainage prevention and prediction, less than one percent of sites permitted in the 1990’s resulted in post-mining discharge problems. We are working to develop and commercialize technologies that will improve the way coal is used to reduce the environmental emissions and increase efficiency.

In 1999, Pennsylvania’s largest power generating companies made major investments in state-of-the-art air pollution control equipment. Edison Mission Energy voluntarily spent \$200 million to install air pollution control equipment at its Homer City Power Plant. PPL also installed new equipment and made improvements at two of its coal burning plants.

Comprehensive and flexible national energy policy will allow states and regions to develop unique and appropriate strategies that will capitalize on the unique variations across the nation. Pennsylvania is working closely with other states in our region, as well as our colleagues across the nation to leverage experiences and ideas. Because so many states use energy program funding to carry out these programs, a clear and consistent linkage between energy policy and energy budgets is prudent, and will ensure success in meeting state and national goals.

In late 2000, Gov. Tom Ridge created the multi-agency Energy Task Force to bring together the many Commonwealth agencies that interact on energy related issues to work together and strategically to help shape Pennsylvania’s energy strategy and policy, and align our activities with overall goals. As a result of this Task Force, we have created a website—www.PaEnergy.state.pa.us—where Pennsylvanians and others can come to for a full range of information and resources regarding energy efficiency, energy conservation, and pollution prevention.

In summary, I trust that these comments show that we strongly believe that sound energy policy needs to recognize the importance of: a comprehensive and flexible national policy, clear and consistent linkages between budget and policy, a diverse portfolio of energy sources, realizing the importance of both supply side and demand side management, and the need to work together on developing, testing, and applying new and innovative ideas.

Coal has been, is, and will be a key part of Pennsylvania’s economy, but it will be one of the many tools and resources we will bring to bear on the growing energy needs of our commonwealth and America in the years to come.

Thank you for your time attention, and the opportunity to share these thoughts with you. I would be happy to answer any questions you may have.

Mr. BARTON. Thank you. We are now going to start our question period. The Chair would recognize himself for 4 to 5 minutes. My first question is a very freshman question. I want to ask somebody to tell me what a short ton is of coal, as opposed to a long ton or a regular ton. Is there a difference or is that just terminology?

Mr. HARVEY. I will answer that since it is economics to me. A short ton of coal is 2,000 pounds, and a long ton is 2,200.

Mr. BARTON. So there is such a thing as a long ton?

Mr. HARVEY. Yes, on the international markets, and a lot of times they will say short and long.

Mr. BARTON. So you say short and long instead of light and heavy or something?

Mr. HARVEY. But in the United States a short ton. So Europe is a long ton and the United States is a short ton?

Mr. BARTON. How many short tons does it take, if you know this, to make up what we call a quad of energy? We record everything at EIA on an annual basis by quads of energy. So how many short tons in a quad, and if you don't know, just say you don't know, or you will just get back to the record.

Mr. HARVEY. We will just get back to you on that.

Mr. BARTON. Okay. Doctor, if we were not going to have to regulate CO₂ as a pollutant, but if we wanted to think about that, is there any existing technology that could scrub out of a coal burning powder emissions, or do we just have to burn less coal?

Mr. YOON. Scientifically, yes. There is a technology, but it is too expensive. So my answer is no. However, I have seen some papers saying that they mine some minerals which can absorb CO₂ at higher temperatures. And if we can develop this technology for them, we can make it economical, and it is viable.

Mr. BARTON. As Mr. Roberts said, we might be able to do that in the year 2015. So there are some areas that we could do some research?

Mr. YOON. Yes, sir. I have seen some papers on that.

Mr. BARTON. Okay. Mr. Abdoo, we have done the Clear Air Act in the mid-70's, and we did the Clean Air Act Amendments in the early 1990's. And in both cases we grandfathered a number of existing coal-fired power plants on the thesis that eventually they would become uneconomic, and they would go away, and they would be replaced.

Well, that thesis has proven not to be true. People have worked miracles in keeping older coal burning power plants in existence. When we reopened the Clean Air Act in this subcommittee next year, there is going to be a major debate about existing grandfathered coal plants.

Do you or your association have any information or could you develop information for the subcommittee to what the cost would be to equipment the grandfathered coal burning power plants with the latest technology for emissions; or to retrofit the boilers themselves with new technology?

Mr. ABDOO. I could not do that, but I would suggest to you that it is not practical to retrofit. I mean, many of these old plants were built on a footprint, and that there is no room for scrubbers. It would be like taking a 1957 Chevy and trying to put state-of-the-art pollution control equipment on if there is not the room, and there is not the systems.

But I would encourage you to consider the notion that we are going to take a 1935 coal plant, and we are going to retire that plant if we get our permits, and we are to replace them with a combination of gas and coal, principally coal.

And the emissions, when we take 300 megawatts of 1935 vintage coal out of the system and replace it with 600 megawatts of clean coal, we still have fewer emissions of the replacement than we had before and twice the power.

So if it becomes possible to actually replace older units with clean coal technology and more efficient. I think companies will do it. But right now it is extremely difficult to do.

Mr. BARTON. Well, I think the assumption that we have operated on in prior Congresses when we have done Clean Air Act amend-

ments is that the older powder plants will eventually close has proven not to be true.

And so we are not going to operate on that assumption next year, and as Chairman, I am going to operate under the assumption that they are going to stay open.

But I also want to meet our friends in the environmental community half-way or more than half-way, and we want to reduce the overall admissions. So I think I would ask the panel, but especially those that represent the coal burning power plant groups.

And what would you need to use the existing power plants, and if the assumption is that they are going to stay open, what Federal programs, in terms of tax credits, and/or direct grants, to retrofit or to ask technology?

Because I don't think it is viable to say that we can grandfather them, because if you look at the charts that the Clean Air Working Group put in the record the older coal-fired power plants, their admissions are just so much higher than anything else, and I don't think politically or from just a public policy standpoint that we can just continue that assumption.

My time has expired and so I will recognize the gentleman from Virginia for 5 minutes of questions.

Mr. BOUCHER. Well, thank you very much, Mr. Chairman. I want to extend a thank you also to the members of this panel who have presented carefully researched and gave articulate testimony to us today.

We appreciate your time and your advice. The chairman in his questions has focused on the older power plants and what may need to be done in terms of assuring their continued longevity consistent with our existing belief and environmental remediation.

I would like to talk a little but about what needs to be done in order to encourage the electric utilities to build coal-fired facilities to meet their new generation requirements? And I would open this to anyone on the panel who wants to respond. What is your recommendation for an addition to our national energy strategy approach in terms of specific steps that you would recommend that would incent electric utilities to use coal in the generation of electricity for the new demands that they have? Mr. Roberts?

Mr. ROBERTS. I think there is one thing that we have to come to grips with from my observations over a number of years. I believe that the thought process, for lack of a better way of describing it, by utilities happens to be—you had better get away from coal, and that you are not going to be allowed to burn coal, and if you invest in a new coal-fired facility, that investment may go down the tubes in 5, 6, or 7 years by new regulation.

To the extent that Congress can give some comfort to that fear, I believe you would see investment in new coal-fired facilities. Now, what kind of comfort would that be? That is obviously something that Congress is going to have to wrestle with.

But the truth is that there is a belief out there amongst not only the utilities, but I believe many in the country believe that we do not burn coal now, unfortunately.

I have gone into different venues and spoken, and questions like when did they stop mining coal, and I say, well, they still do it.

Then I tell them that 56 or 57 percent of electricity in this Nation is still comes from coal, and that actually amazes people. Those of us in Appalachia, as you well know, realize the important role that coal plays.

But I think that someone else on this panel may have mentioned it as we went around here, that utilities do not want to invest in a coal-fired facility with the understanding that this may be a very short term investment that they make.

There has got to be some kind of comfort in my opinion given to utilities that that investment once it is made is going to bear the return that they believe that it will over 30 years.

Mr. BOUCHER. Well, the chairman has given us a certain measure of assurance today that we will not have to worry about CO₂ regulations coming any time soon. It is almost certain, however, that new regulations are on the way in some other areas.

For example, just last week the United States Supreme Court made certain that the NO_x SIP call will go forward. So we are going to have new regulations on NO_x. It is probable that the EPA in the not too distant future, in 2003 or 2004, will publish new regulations with regard to mercury emissions, and we can see today the virtual certainty that these new regulations are coming.

Given that fact, Mr. Abdoo, I would like to ask you, because your electric utility is in fact planning some new coal-fired facilities even with the certainty that these regulations are coming, I would like to ask you what other kinds of steps we can take in the Congress that might incent your electric utility and others to opt for coal instead of natural gas for new electricity generation?

For example, what about tax credits? That would help with the compliance costs under the Clean Air Act. The existing compliance responsibilities that you have, as well as responsibilities that you may have for mercury, for NO_x, for fine particulate matter, et cetera.

And you mentioned in your testimony difficulty with regard to siting new coal-fired facilities. I would assume that most of those siting requirements are State in nature, but there may be some Federal requirements that pose a burden also.

And my question in that regard is would it be beneficial to you if there were some facilitation in the permitting process for siting new coal-fired facilities, and if so, if you could be specific about it that would be helpful.

Mr. ABDOO. Yes, sir. There is a couple of things that you mentioned. In our particular case, our proposal to invest \$3 billion in these new coal plants is predicated on a 20 or 25 year write-off of the investment, unlike the traditional 40 years that we get on a coal plant.

And it seems to us that the only way to protect our investors for changing circumstances is not to have the billion dollar investment out there for 40 years. So if you can write it off in a 20 or 25 year period, you significantly reduce the risk.

These gas plants that are built all have a 20 year life. Now, at the end of 20 years, the plant will still operate, but the risk of getting a return on your capital is minimized by having a much shorter horizon.

With respect to the investment tax credit, I would strongly support an investment tax credit for more capital intensive solutions, such as coal burning plants. We did that in 1973 after the OPEC oil embargo.

Congress passed a tax credit, a provision investment tax credit, and it stayed in effect for 5 or 6 years, and did encourage at the time more nuclear and coal plants to be built.

And finally with respect to siting, we have proposed that our new plants go on Brownfield sites, because we have existing transmission infrastructure. We have existing rail infrastructure, and we have existing water. And this goes back to the chairman's point that if you have an older facility that you hope would be retired, or sort of counted on it being retired, we believe we can repower those existing sites.

But again there are difficulties in terms of getting the permits to actually build on those sites, because they tend to be in more populated areas. But I would encourage Brownfield, and some consideration of Brownfield, and an investment tax credit.

And then on the depreciation side, both tax and book. Anything that you can do to shorten the life so that we are not hung out there.

Mr. BARTON. Thank you. The gentleman's time has expired. The gentleman from Kentucky, Mr. Whitfield, is recognized for 5 minutes.

Mr. WHITFIELD. Thank you, Mr. Chairman. Mr. Roberts, you mentioned the United Mine Workers in Appalachia and Illinois, and I want you to know that there are a lot of them in my district in Western Kentucky, and we are excited about Peabody Coal Company being ready to open up a new mine, and also entered with a consortium on a power plant also that will use some local coal. So we are excited about that.

It is my understanding that since 1970 the use of coal has doubled. I think that someone mentioned that. And yet every criteria pollutant set out in the Clean Air Act has decreased significantly. Is that true?

Mr. ROBERTS. That's correct.

Mr. WHITFIELD. Now, in an opening statement, someone mentioned that carbon dioxide was a criteria pollutant under the Clean Air Act. That was not my understanding. Do you all understand that?

Mr. ROBERTS. No.

Mr. WHITFIELD. I know that there was some reference to carbon dioxide in there, but I don't think it was designated as a criteria pollutant. Mr. Cohen, carbon dioxide, of course, is quite controversial, but we all recognize that there is a lot of natural carbon dioxide out there, and then there is man-made carbon dioxide.

And it is my understanding that each year about 200 billion tons of natural carbon dioxide is generated, and that the man-made portion is something like 7 billion tons a year. And yet I hear a lot of people say that fossil fuels are generating 40 percent of the carbon dioxide.

Mr. COHEN. Man-made, 40 percent of the man-made. I think that is the context in which you hear that statement.

Mr. WHITFIELD. But when you look at the totality of it, 7 billion versus 200 billion, 7 billion tons is a lot. But when you take the total of 200 billion that is generated by natural means, I mean, there is a lot of carbon dioxide out there.

Mr. COHEN. I am not a climate scientist, but I think any—including Mr. Linzen—would tell you that the issue is not the volume. It is the margin. What you have got with the carbon cycle on the globe is a very delicately balanced cycle.

And the proposition that most people accept, most scientists who have studied this, is that fluctuation in the order of 7 billion tons could make a big difference in an ecosystem that is otherwise pretty well balanced.

Mr. WHITFIELD. Now, it is my understanding that most of the computer modeling on projections of global warming are circulation—what is the word for it, circulation—well, anyway, circulation motion models, I believe may be the name, and that they are about 7 or 8 of them around the United States.

And then when the data is put in, all of them will say in the future, that at some point in the future that there is going to be global warming. And yet it is my understanding that when they went back to 1880 when our weather records were first started, and they inserted these numbers into the models that are used to project global warming in the future, that all of them said that today's average temperature should be about 5 degrees more than it is, than it actually is.

Which would mean that there is a good possibility that some of those computer modelings would be wrong for the future. Would you agree?

Mr. COHEN. If you are asking me to concede whether there is uncertainly in computer modeling of the climate change, I am going to concede that. I think the question before the Congress is to what extent are you going to take the risk that that modeling—that some of the modeling is right, showing potentially very large swings in climate, and what are the costs of doing something about it.

I mean, I would hope that we could get to that debate rather than try and talk theologically about whether CO₂ should or should not be regulated. The question is when and how.

Mr. WHITFIELD. Well, I am glad to hear you say that, because a lot of times—and as I mentioned in my opening statement, there is a big difference of opinion about a lot of this. But I have read a lot of mailings put out by groups, like your group and others, who are responsible. And they use a lot of scary techniques at times.

And I think what you have indicated, and I think that other scientists, many scientists, agree that sometimes this may not be quite as bad as we think, or we say. And that as we move forward in trying to adopt an energy policy, if we can be less strident in our differences, and try to agree to some common sense approach, I think we have a chance.

Mr. COHEN. I would agree and happy to have that discussion.

Mr. WHITFIELD. Thank you. I guess my time is up.

Mr. BARTON. Did you have one more question, or did you—it seemed to me like you were right in the middle of something.

Mr. WHITFIELD. Well, I did have one other question.

Mr. BARTON. Well, get one more question in and then we will go to Mr. Luther. I mean Mr. Barrett.

Mr. WHITFIELD. The national acid precipitation assessment program, which is a 10 year program, a \$540 million study that sent researchers to sample 7,000 lakes and hundreds of woodlands, and it was said that this was one of the most thorough studies where scientists actually went to sites. There was not a lot of extrapolations or guesstimates, or computer projections.

And in that they found that while it was true for about 240 lakes in the eastern United States, acid rain that was present increased; and there was also about a same number of lakes that the acid rain decreased.

And also it showed that most of the critically acidic lakes were in Florida, and Florida is not in the main wind stream from those midwest power plants that use coal.

Mr. COHEN. No, but they are in the mainstream of a heck of a lot of southern power plants that utilize coal. Northern Florida, I guarantee you, is right downwind of a massive amount of coal-fired electric generation.

Mr. WHITFIELD. But in Ohio, where there was the same—I mean, they are right in the midst of all of this as well, and they didn't find any acidic lakes.

Mr. COHEN. Tall stacks blowing east.

Mr. WHITFIELD. And a number of scientists say that a lot of this is caused from the soil and not so much from the atmosphere.

Mr. COHEN. There are two factors that determine the acidification of a soil, or a lake, or a water body. It is going to be some combination of the inherent buffering capacity of the soil, and the Northern Florida soils, as well as the Northeast soils, and parts of the Appalachian soils, are very weak in acid neutralizing capacity.

So you have an underlying weakness. However, I guarantee you that any competent acid rain researcher is going to tell you that the loadings of sulfur dioxide and nitrogen oxides from up-wind sources made a very significant difference in worsening underlying acidic conditions.

Mr. BARTON. Thank you. Anytime you see a member who comes with a textbook that he has personally earmarked, you know that he is prepared for a serious series of questions, and so that's why we gave you some extra time.

Mr. WHITFIELD. Can I have some more?

Mr. BARTON. No. We are going to go to Mr. Barrett for 5 minutes.

Mr. BARRETT. Thank you, Mr. Chairman. I actually didn't know whether carbon dioxide was or was not included as a pollutant until I saw the letter from President Bush. So I would concur and accept Mr. Whitfield's statement that under the Clean Air Act that carbon dioxide is not a pollutant.

But I think the question is bigger than that, and I certainly heed your advice, Mr. Abdoo, that we should not be distracted from California and the latter, and we should be trying to focus on a long term view of how to deal with these issues.

And I am curious from your perspective. Again, not to get caught up on that issue in and of itself, but it appears that the President favors basically a three pollutant approach; sulfur dioxide, nitrogen

oxide, and mercury, obviously carbon dioxide not being a part of that.

Does this provide greater certainty for your industry than the current regulatory regime, or how would you approach this with these either different pollutants or not pollutants, but obviously an issue.

Mr. ABDON. I certainly believe that oxides, nitrogen, sulfur, and mercury, should be regulated in the traditional sense that we regulate it. Carbon dioxide is not a pollutant, but given the science on global warming that is out there, prudent avoidance I think is certainly something that ought to be considered.

And so I continue to favor a comprehensive approach, wherein we have more flexibility to determine how we are going to do deal with all of these things. And as we look at building coal plants, and replacing older coal plants with new efficient clean coal technology, we are going to get significant reductions in carbon with more output without having some hard and fast regulation.

I continue to believe that American ingenuity is second to none, and given a little guidance without a sledge hammer, we will figure out ways to keep this country running strong without having to have a specific regulation on a non-pollutant.

Mr. BARRETT. Mr. Cohen, do you want to comment on that?

Mr. COHEN. Yes. I think it is interesting, although I am not sure Dick had said this publicly, there certainly are other utilities, coal-fired utilities out there who made the point that they would rather have a four emissions strategy—and let's avoid the word pollutant for a second, but a strategy that sets hard targets for NO_x, SO_x and mercury, and CO₂, because they want to nail down their liabilities now, and figure out what the next decade looks like, and then figure out what they want to build, and retire, and run less or run more.

And I would submit, Mr. Boucher, in response to your question that one of the things—if you really want to make new coal-fired generation in this country work, is to give a clear road map as to what the total emission targets are for all the key emissions for the sector, including carbon dioxide.

And I think what you will find is that many utility executives will say certainly privately that there is value in having a sense of what the 10 year trajectory is on CO₂ nailed down. Now, we might debate what that is, but they would like to see that as part of the package so that they know where they are going.

Mr. BARRETT. Would anybody else like to comment? Again, I am curious as to the certainty. I would think as an investor or as a business person that certainty provides me some solace one way or the other, and if you are trying to determine where to put investors' dollars, having some certainty would be helpful.

Mr. ROBERTS. I am confused about how we have reduced carbon when there is not technology available to reduce carbon unless you reduce the amount of coal that you are burning. I am confused about that.

Mr. BARTON. The chairman shares your confusion.

Mr. COHEN. Mr. Chairman, a decade ago people said there was not technology to control nitrogen oxides from power plants to the

degree that we have now. We put out targets, and now we find half the Nation's coal fleet is going to be scrubbing for nitrogen oxide.

Mr. BARRETT. Let me go back to Mr. Roberts. So your position is then that we should do nothing? I am curious as to what your position is with carbon dioxide.

Mr. ROBERTS. I don't think that is a fair characterization.

Mr. BARRETT. I am just asking you what we should do, because we don't know what to do.

Mr. ROBERTS. In my opening statement, I pointed out that technology does not exist as we meet today, and I do not think there is any disagreement on this panel or on the subcommittee, to reduce carbon.

We all have advocated, I believe, and I know I have, that we continue utilization of the burning of coal. And in the conclusion of my opening statement, I said we should not pass regulation that out-runs technology, because technology according to the experts will not be available until about the year 2015.

I strongly support the continued use of the burning of coal and investment in utilities that burn coal. But you can't say, okay, we are going to pass a regulation that reduces the amount of carbon that goes into the atmosphere from these utilities starting next year because technology does not exist.

Mr. BARRETT. But when it comes to us, the bottom line is either we say, yes we are going to do it; or, no, we are not going to do it. So I am trying to figure out what you are advising us to do.

Mr. ROBERTS. My advice to you would be that there would be incentives for the continued investment and development of technology to reduce carbon, which does not yet exist.

An encouragement of that technology, development by those who have expertise in that field, and if the question today is, well, let's reduce the amount of carbon coming from coal-fired utilities, that is impossible unless you just say we are going to burn less coal.

Now, we have to come to grips with that, too, and we can't as I pointed out in my opening statement, we can't camouflage this.

If we are talking about reducing the amount of carbon coming from coal-fired facilities, we are really talking about burning less coal. So we can't say, oh, let's add carbon to this mix. You can do that, if that is Congress' desire, but remember what you are doing.

You are saying let's take coal out of the mix into the future because no one in my opinion—and I applaud Mr. Abdoo here for the investment that they made. But very few utilities are going to make investments in new coal-fired utilities or facilities with the understanding that they have got to figure out how to reduce carbon in the atmosphere. And they can't do it, and so they are going to go to natural gas or some other fuel.

Mr. BARTON. The gentleman is 2 minutes over. We may do another round if you want to stay. Let me make a statement before I recognize Mr. Shimkus. I am the subcommittee chairman of this subcommittee, which doesn't mean anything intellectually.

But it does mean something procedurally. I am a registered professional engineer, and I used to work for utility. I have talked in Texas to some of the people that are most expert in this area, and if you want to reduce CO₂ right now, and the people that I have talked to, in the future, you have got two choices.

You can burn less coal, or you can burn the existing amount of coal cleaner so that you get a little bit higher output from the input. But you can't scrub it, and you can't clean it, and you can't chemically combine it.

Now, having said that, without the announcement from the White House yesterday, my assumption is that President Bush is going to be President for at least 3 years and 11 months longer, and I hope for 7 years and 11 months longer, although that will be determined 4 years from now.

So any mandatory regulation of CO₂ is off the table for at least 3 years and 11 months, and hopefully for 7 years, 11 months, and as long as I am subcommittee chairman, it is off the table indefinitely. I don't want there to be any uncertainty about that.

Mr. BARRETT. Mr. Chairman, what if President Bush changes his mind again?

Mr. BARTON. Well, if he changes his mind, that does not change my mind. Some of us have discussed this with the person who changed his mind, and I would argue that he did not change his mind. He was not as fully informed before some of the initial announcements were made last summer.

Mr. WALDEN. Mr. Chairman, I am sure that he thought it was a pollutant and was covered under the Clean Air Act when he made that statement.

Mr. BARTON. Quite possibly, because a lot of people did. So, anyway, having said that, the gentlemen from Illinois is recognized for 5 minutes for questions.

Mr. SHIMKUS. Thank you, Mr. Chairman. You have kind of taken some of the—have redirected some of my questions and comments, because I was going to follow along on the debate of the CO₂, and if you decrease coal, then the big picture, and the national energy policy.

If coal use declines because of CO₂, then we have an increased demand for natural gas, an increased demand for nuclear, an increased demand for renewables and higher costs. And that is the bottom line, and we faced it all over this country, especially with the natural gas and the whole debate of "the fuel of choice" deemed appropriate by the politicians for the past 8 years.

So what I would like to do, Mr. Chairman, is submit for the record a document from the Illinois Coal Industry White Paper from 1999.

Mr. BARTON. We will have to show that to the minority, but assuming that there is no objection from their side, it will be received.

Mr. SHIMKUS. And in there, there is—and just to talk about the cost of compliance and what it has done to Southern Illinois coal. And in there on page 13 of the power generating done in Illinois, 25 million tons comes from Colorado because it is low sulfur coal; and 12.1 tons come from Illinois, because we have high sulfur coal.

There is a cost incurred by cleaning or getting to admissions standards appropriate. And so the debate on tax credits, research and development, clean coal technology, every year in our appropriation battle, clean coal technology comes under assault for all a lot of good reasons.

We have a vote every year on the floor that we ought to strip clean coal technology out, and we ought to go to LIHEAP, or weatherization, or some other debate, and sometimes we win that vote on the floor, and sometimes we are able to strip it out during the conference report.

But I want to continue to focus as a national energy policy on clean coal technology. I wanted to also—it was interesting, Ms. Hutzler, that you mentioned Brownfields, because that is another area or another committee that I serve on.

And the terminology based upon a couple of hearings that we focused down to was legal finality was the buzzword. How do we encourage people to go into Brownfields so that they can reuse these sites. Well, what they need is legal finality. They need to know that they are not going to incur any other additional costs if they clean up a Brownfield site.

And am I right in asking that that is kind of what industry is looking for on clean air regulations, is some legal finality so that you all know, and it is legal finality on emissions; and for you, Mr. Abdoo, it is legal finality and the ability to move to a Brownfield site. Is that correct?

Mr. ABDOO That is absolutely correct, and I think in fairness that the shorter the life, the easier it is to give more assurance on the legal finality as you describe it. So those are the factors that we look at in terms of we are going to go to investors, and we are going to ask them to put up a good share of this \$3 billion.

And as custodians of that capital, we cannot take an undue risk that somewhere down the road we are going to get beat up over that investment. So we want some certainty, and I think you are absolutely correct. If I could go back to this question about reductions on carbon.

I think that there is some semantics here about whether we are talking absolute tons, or CO₂ per unit of output. And in my comments, I am talking about the latter, because if I take a coal plant that has a heat rate of 12,000 Btu per KWH, and I replace it with a 9,000 Btu open KWH, I may indeed burn fewer tons of coal, but the carbon per unit coming out of that is going to be less because the efficiency is higher.

And yet as I expand coal in my mix to supply more and more of my requirements, I burn more coal, but the per unit is less. So I concur completely with the chairman in his assessment, but mine was on a per unit basis rather than the aggregate.

Mr. SHIMKUS. Well, I have got tons of questions, but let me go to the Energy Information Agency and ask about this chart again. The electricity generation by fuel on some of these charts, were they created after the large natural gas price spikes that we have seen over the last couple of months? How current are these?

Ms. HUTZLER. Actually, they were created last fall, and at that time we were expecting a price spike, but we were thinking that it would max out at about \$3.30 per thousand cubic feet.

Mr. SHIMKUS. And what is it now?

Ms. HUTZLER. Well, in 2000, it turned out to be about \$3.60 per thousand cubic feet. So we were only about 20 cents off in 2000. But now in 2001, we are actually expecting it to go up and be in the \$4 to \$5 range on average.

Now, the difference that it would make in those forecasts is that we were expecting the price spike to come down by the year 2004, and then go back up on its long term trend. Now we think it is going to take a few years longer to get back down because the market has been so tight.

But given that we still see the long term trend reaching somewhere around \$3.00 or \$3.25 per thousand cubic feet, we would still indicate quite a bit of natural gas builds.

Mr. SHIMKUS. And Mr. Chairman, I will just finish by saying another issue in this whole portfolio of energy and the reliance on natural gas has been the development of peaker plants for the precise reason that was mentioned here.

They are perfect for peak demand. The reality is that they are not perfect for basic load, and what we have right now because of the high demand, we are having these peaker plants running as if they are supplying for basic load. They are not designed to run all that time.

That turnover is going to be quicker, and that there is going to be a more higher demand for natural gas, and that is why this whole basic load function, and nuclear, and coal, are so critical in the national energy debate, and I yield back my time.

Mr. BARTON. The gentleman from Ohio, Mr. Strickland, is recognized for 5 minutes for questions.

Mr. STRICKLAND. Thank you, Mr. Chairman. I was sitting here wishing that we had had this kind of discussion 30 years ago, and if we would have focused on these issues 30 years ago, we may not be in the situation that we are in today.

And I promise you that I am not going to take more than my 5 minutes. But I do want to say a word about diversity of energy sources in this country. I think we need to think of two D's, domestic and diversity; and I would just like to take 30 seconds of my time to point out once again, Mr. Chairman, as I have at other times, that in this country today we are looking at the possible demise of the uranium enrichment industry, an industry that provides about 23 percent of all the electricity in this country.

And I say to you once again that if Saddam Hussein was cutting off an oil pipeline that was producing 23 percent of the oil generating electricity in this country, we would be mobilizing and going to war. And yet this administration and the past administration, and especially the past administration—and I think this Congress—is sitting here allowing this to happen.

And with all respect to my colleague from Kentucky, we are allowing the only plant in this country that currently has the capacity to produce a finished nuclear fuel to be closed in June of this spring before my colleague's plant in Paduka, Kentucky, has demonstrated the capacity to take up the slack.

And that is happening now, and it is a developing crisis, and I just wanted to get those sentiments on the record.

Mr. BARTON. We are going to have a hearing on nuclear power. It is coming. I mean, I am sure that the gentleman is aware of that. And we never have enough time, but we will have more time at a future hearing to focus on that issue.

Mr. STRICKLAND. Great. And I hope that we do it soon, and I want to thank you for this hearing. So much of what I do, and I

think we do here in the Congress, is kind of meaningless. This is important stuff, and we ought to spend more time on it.

Mr. BARTON. Speak for yourself.

Mr. STRICKLAND. We ought to spend more time focusing on these kinds of issues. Mr. Cohen, you said something that I think is relevant. You said the question is when and how, and I think that is related to Mr. Robert's statement that we should avoid energy and environmental policies that outrun our technological abilities and intent to move coal out of the mix. That would be very costly in the short run and foolish in the long run.

And I think the when and how is related to what Mr. Roberts has said here, and then I get back to the modeling question that we all know as we look at these models regarding global warming, we are concerned, but we understand that there is a lack of preciseness.

And no one is arguing, I think—are we—that we should not pursue the technology and the research, and that at some point, hopefully sooner rather than later, we will be able to deal with this issue.

But does it make sense to impose regulations now when the technology does not exist, and when we need the energy? And I would just like for you to respond to that, the when and how question. Are we trying to impose regulations that we are not imposing in a wise and in a timely fashion?

Mr. HARVEY. In any given energy policy, you have to look at your resources, and if you look at this country, its resources are very vast in coal. Now, if we take the pollutant approach and say that CO₂, which we don't have the technology to take care of it today, and you throw coal right out in front, then your resources are gone, and you have to have a different energy policy.

And you have to ignore the resources that you have that are domestic and abundant. Now, if we are willing to do that as a society, I guess that is our choice, but it is not the answer. If you look at the history of how we regulated coal from 1970 on, we tripled the production of the use of coal, and dropped the emissions by 21 percent, and followed the law the way Congress laid it out.

So if the technology is there, we will follow it. The utilities were followed, but give us some guidance, because we have not had an energy policy. We have had an anti-energy policy, and we are to the point where it is critical. That is my response to it.

Mr. COHEN. I have to begin by responding to what the gentleman before me said. This figure has been cited several times and we have seen coal utilization increase dramatically and criteria mission drop. That was over the bitter objections of the coal utility industry.

That is not a product of a bunch of folks just deciding to do this. This is the result of legislation putting in place stringent caps.

Mr. STRICKLAND. But Mr. Cohen, that does not change the fact that it has happened does it?

Mr. COHEN. That's right. My point is that if you set targets—I mean, in 1988, a significant portion of that industry was saying we can't meet a 9 million ton target. It is technologically infeasible. We just can't do it, and we are doing it.

And so my point is that you have to be wary of statements that we can't put in place a target until we have absolutely every piece of technology nailed down. The history is to the contrary.

Mr. STRICKLAND. Can you bring me any scientific evidence that it is possible to do what Mr. Roberts says is not currently possible to do?

Mr. COHEN. To strip carbon out of the flew gas?

Mr. STRICKLAND. Yes.

Mr. COHEN. No, I can't say that we can do that today, and I was very up front when asked what this means. If you say that you have to drop CO₂ from the power sector in 2 years by X percent, that will implement some reduced utilization of coal, and I was very explicit about that.

Mr. STRICKLAND. And I like the fact that Mr. Cecil Roberts says that we ought to be up front about what we are doing, and what we mean when we say these things.

Mr. COHEN. Sure.

Mr. STRICKLAND. And given our energy crisis, and given our abundance of coal, given the fact that I think we have got some time to make the necessary changes, we ought to be prudent in the decisions that we make. Thank you.

Mr. BARTON. Before I recognize Mr. Burr, I want the record to show that Mr. Strickland comes to all the hearings. He comes to most of our working group sessions. He is a very informed member of the subcommittee, and is doing meaningful work.

In spite of his own characterization, he is a meaningful member of this subcommittee. The gentleman from North Carolina is recognized for 5 minutes.

Mr. BURR. Ditto.

Mr. BARTON. Who is also a meaningful member of the subcommittee.

Mr. BURR. Mr. Harvey, is it safe to say from your testimony that we have got over 200 years of coal inventory out there?

Mr. HARVEY. We have 200 years of reserves. Access to those reserves are every day becoming more limited by regulation, and I call it a de facto withdrawal of resources from access. But, yes, if we had access to it, at today's use, that's how much coal we have.

Mr. BURR. Ms. Hutzler, can you possibly tell us how many years worth of coal was designated off-limits as a result of the previous administration's monument designation specifically in Utah?

Ms. HUTZLER. I'm sorry. I do not have that statistic.

Mr. HARVEY. I have it. I worked for a company that had coal resources in the Caparariz plateau. There is 2.5 billion tons there. Probably the lowest cost energy for the future for California was taken out of that. There were 2.5 billion recoverable tons in that area right there without debate.

Mr. BURR. Tell me, is that something that the energy information agency should know?

Ms. HUTZLER. About the resources in each of the States, yes, I just did not have the statistic in my head as to how much was there.

Mr. BURR. But is that significant? I mean, does that have a significant impact on what our energy policy would be?

Ms. HUTZLER. Well, if we are talking about needing 1,000 short tons of coal a year, we are able to produce that much right now with accessible resources. You are talking about needing to get to reserves much beyond the forecast horizon that we are talking about in the Energy Information Administration.

Mr. BURR. Let me ask you, Mr. Harvey, we can go into the 23rd Century with the coal supply that we have got out there if we can get to it, and if it is not put off-limits. How can we use this domestic resource to reduce our dependence on imported energy products, and as a follow-up, can we become independent if in fact we take coal off the table, or do we significant restrict its use?

Mr. HARVEY. Well, there is no way that we can become independent. As I said, 90 percent of our fossil fuel, including oil and gas, is coal. So if you take it off the table, you are down to 10 percent. So all of our energy has to come from somewhere else, or nuclear power.

So you have to have it in the mix, or otherwise we are going to drastically change where we are going.

Mr. BURR. Do you personally have an opinion on the DOE's clean coal technology program? Does it work?

Mr. HARVEY. I do. I think if you look at what they have done in the past with the funding that they have had, they have influenced SO₂, and NO_x, and they are looking at mercury. There are a lot of good things going on with that technology.

But remember that is new technology. Every generation of electricity, every 40 years that we put new generation in, it has different technology. We are looking at the next generation now, and that is funding and that research is going to be the problem-solving research of what we do in the next 40 years.

Mr. BURR. Mr. Cohen, let me ask you something about your testimony if I could. You referred to the North Carolina and Tennessee mountains, one of the most beautiful places in the country.

Mr. COHEN. And most heavily polluted I'm afraid to say.

Mr. BURR. You stated that very well. You said that a recent study indicates that the visibility damage to our national parks based on surveys of visitors can be estimated at \$4.3 billion per year. Was it the visitors that told you that?

Mr. COHEN. I will be happy to give you the report or submit it for the record. It is actually a survey methodology based on people who would use those parks and asking them to value the monetary damage.

Mr. BURR. So the visitors that you surveyed valued—

Mr. COHEN. The increased clean air, or dis-valued if you want to use the economist's term, the pollution levels, and they assigned dollars values to that.

Mr. BURR. Is that like I would only stay 3 hours because I can only see 12 miles, and I would have stayed 4 hours if I could have seen 16 miles?

Mr. COHEN. I don't have the exact methodology in detail, but it is along the lines of—

Mr. BURR. Well, you said earlier that it is really important to understand the methodology that we are using to come to some of the numbers that we are quoting.

Mr. COHEN. Sure.

Mr. BURR. And you are quoting a number of \$4.3 million per year.

Mr. COHEN. I would be happy to submit the report to you. It is done by Apt Associates, which is a well-recognized research firm that is used by a number of Federal Agencies to value environmental damage.

Mr. BURR. Is a survey by a visitor a scientific survey do you think?

Mr. COHEN. Yes. It is a well known methodology in social science to use—

Mr. BARTON. Would the gentleman yield?

Mr. BURR. I would be happy to yield.

Mr. BARTON. Do you think that those people that did that survey didn't go anywhere, or you think that even assuming they didn't go to that place, maybe they went to Texas and spent that \$4.3 billion in Texas, or maybe they went to West Virginia. I mean, do you think they just stayed home and pouted?

Mr. COHEN. The point is that it is a natural resource that has been degraded, and I think if you look at my testimony that you will see repeated headlines where politicians in Tennessee—Senator Thompson and Senator Friss—have recognized this is a significant problem that needs to be addressed.

And I think that survey methodologies are one way to get at it, but there is a perception that is based on reality that there is an air quality problem that is leading to the degradation of scenic values, as well as public health in North Carolina and Tennessee.

Mr. BARTON. I don't think that the subcommittee is disputing that air quality is a serious problem and that this subcommittee is going to address it in a serious fashion, but some of the so-called methodology, at least in my opinion, overstates the monetary value, and I think the gentleman from North Carolina question is on point when he questions this \$4.3 billion number.

In political terms, we would not call that a hard dollar. We would call that a soft dollars.

Mr. COHEN. Well, I would be happy to have the experts who prepared the report come and testify before you, Mr. Chairman.

Mr. BARTON. Does the gentleman have another question?

Mr. BURR. No, I would only make the statement, Mr. Chairman, that if it were a \$4.3 billion loss to North Carolina, trust me, we would be screaming. We are concerned, but our tourism business is not screaming yet about the problem as to \$4.3 billion a year.

Mr. BARTON. The gentlemen from Pennsylvania, Mr. Doyle, is recognized for 5 minutes.

Mr. DOYLE. Thank you, Mr. Chairman. Mr. Chairman, I share the frustration that many of us have on this committee as we realize that fossil fuels are going to be supplying our energy needs for decades to come, and that coal is one of the most abundant that we have.

And every year since I have been here, since 1994, I have stared at very disappointing numbers in the DOE's fossil energy R&D budget, only to come to the floor of the House and watch members try to cut it even further.

It just seems shortsighted and wrongheaded that if the goal here is to take our fossil fuels and burn them cleaner, and make them

more efficient that we should be increasing our R&D efforts and not cutting them every year.

And from what I have seen from this year's DOE budget, the initial numbers that I have seen, they are equally disappointing. And it looks like we are going to start this process all over again.

Mr. Harvey, I have had a chance to tour CONSOL's R&D facility and library, and I am aware of some of the exciting work that you are doing there, and I want to congratulate you by the way for being awarded a new DOE grant to further support your coal bed methane production technology, known as slant holed drilling.

Maybe you could give the committee a short overview of that project and its relevance to the coal industry. And then, second, you talked about the importance of R&D in your testimony, and could you elaborate on the emerging R&D needs facing the coal industry, and those who burn coal, and how significant an issue is like Section 29 tax credits and in meeting some of those needs.

Mr. HARVEY. Okay. Thank you. We do have an extensive R&D facility, and we are the only coal group that spends its own private money on coal research. It has been a declining thing over the years. We have seen the Bureau of Mines and other things go by the wayside, but we have held that in place.

In terms of our research on the degassification of coal, the No. 1 thing is that we did it for safety reasons. We did it so that the miners we put under ground that work for us, and that we want to get the gas out of the mine, because it is very volatile.

It became a byproduct for us and we have learned technology now to extract that gas way ahead of the mining process and make it much safer, and now it is a product, of course, with new natural gas prices, and is a product that creates value for the company.

If you look at Section 29 credits and those kinds of things, it actually gives incentives to companies to look for new ways of taking energy that might have been a waste product, or just vented into the atmosphere, and bring it into a useable energy source for the Nation. And that is one of the big steps that has happened with Section 29 credits on gas, as well as coal.

Mr. DOYLE. Thank you. Mr. Pinero, by the way, I didn't get a chance to welcome you from our Pennsylvania Department of Environmental Protection. You said in your testimony that in Pennsylvania that some of the largest power generating companies made major investments in state-of-the-art pollution control equipment.

Edison spent some \$200 million in PP&L. I am curious if the Bureau of Environmental Sustainability played any role in the decisionmaking process of industry in Pennsylvania?

Mr. PINERO. Well, with those particular projects and others similar to it, our role has been championing the importance of sustainability of thinking about environmental impact, energy efficiency, and the effect it has on the economy. With those particular projects, I am not aware of any specific incentive or contribution to it.

Mr. DOYLE. Thank you. Mr. Abdoo, I was pleased to read about your interest in the pressurized fluid bed construction. It is an interest of mine as well. I am actually working to try to establish a demonstration project on a Brownfield site in my district that would house a greenhouse there. Can you give us a better sense

of the potential benefits of embracing fluid bed combustion technology?

Mr. ABDOO. There are actually three new technologies that we believe will facilitate the cleaner burning of coal, a fluidized bed being one. But I am not technically competent to give you specifics, but I would be happy to provide a written response to that question.

Mr. DOYLE. Thank you very much. Mr. Chairman, I see that my time has expired.

Mr. BARTON. I thank the gentleman, and I would recognize the gentlemen to your right from Ohio for 5 minutes for questions.

Mr. STRICKLAND. Thank you very much, Mr. Chairman. I apologize for having to leave the hearing and come back.

Mr. BARTON. I am glad that you came back.

Mr. STRICKLAND. The question that I wanted to ask about was exactly the one that you just said that you don't have technical competence to talk about. I am very much interested—fluidized beds have been around for a long time.

It has always been a problem with scaling them to meet the needs of real world generating capacity, and coal gassification, I mean, it has been this dream for decades and decades. Can you at least talk to us a little bit about the state of play, in terms of development of the applicability of the technology?

Mr. ABDOO. We identified three technologies that are being used in Europe, as well as Asia, that we believe have great promise, and given the timeframe, we believe that the first of these 600 megawatt coal plants that we would build would be pulverized coal, higher pressure, higher temperatures, to gain additional efficiency.

And in that plant we would hope to have on line by about 2007, but the 2009 and 2011 plants, we believe that the other technologies that we have cited, particularly the fluidized bed, pressurized fluidized bed, may be able to be sufficiently along at the risk profile of using that technology will in fact work.

With respect to coal gassification, we believe that also has promise, but we are talking about a Brownfield site that has limited space, and we just don't think that we could put that on that site.

But if we went to a Greenfield site, that would probably rise in prominence to the top of the pile.

Mr. STRICKLAND. What do we know about precombustion and combustion technologies, and how they fit with post-combustion treatment technologies?

Mr. ABDOO. My sense is that in terms of the pre versus post, that the pre is more focused on the carbon, on the Greenhouse gases, because there is technology that is available that is very efficient on the NO_x side, and on the sulfur side, and we believe on the mercury side, and the fine particulate.

But on the carbon side that is where the difficulty lies, and in coal gassification, for example, there is budding technology that will allow you to strip the carbon from the coal in the process of converting the coal to a clean gas that you can burn. Now, whether or not at this point we would invest money in that, we would not. We believe that is still risky and unproven.

Mr. BARTON. We have one of the world renowned scientists with us. Would you like to comment on his question, Dr. Yoon?

Mr. YOON. You mean the impact of pre-combustion technology, versus post-combustion?

Mr. STRICKLAND. Yes, and their compatibility with current post-combustion cleaning technology.

Mr. YOON. Regarding CO₂?

Mr. STRICKLAND. Yes, or anything, anything.

Mr. BARTON. We don't hold it against you that you are an expert.

Mr. YOON. I am not an expert in the post-combustion scrubbing technologies, but my common sense tells me that if you start with cleaner coal before you burn it that you can do a lot of things. For example, you can increase the combustion temperature without slagging and following problems.

And then all this heat transfer, and all these efficiencies will go up or should go up in the power generation. If the efficiency goes up, CO₂ per unit of power that you are generating should go down.

So it is a win-win situation in my opinion. The other thing that I would like to mention is that if the U.S. develops a pre-combustion technologies, we can export it to China, to India, where they do burn coal without cleaning.

When you do that, the efficiency goes way down, and then globally, if you look at the global situation as a bubble, then as a whole we are generating a lot more CO₂. So I think we should invest in pre-combustion technologies.

Mr. BARTON. Whether it is a pollutant or not?

Mr. YOON. Yes.

Mr. STRICKLAND. Thank you very much, and I yield back my remaining time.

Mr. BARTON. We are not going to have a formal second round of questions, but we are going to just kind of have a general free for all for a few minutes. We will start with Mr. Whitfield. He said that he had one final thing.

Mr. WHITFIELD. Thank you, Mr. Chairman. I just wanted to make a reference to my good friend from Ohio about the capability for domestic production of enriched uranium, and I do share your concerns, even though the Duke plant is open now.

But you and I know that gas diffusion and technology really can't compete in the long term. So that is something that we need to get into in the nuclear side. Another comment that I would make which is self-evident, and as Mr. Cohen said, we may not have the technology now, but we can develop the technology to do anything.

But ultimately the American people are going to have to decide how much are they willing to pay for it, and right now at least my constituents are not willing to pay the price of natural gas that they are paying right now for the long term. So ultimately the American people are going to have to decide how much do they want to pay for electricity.

Mr. BARTON. Good point. Congressman Boucher has a comment.

Mr. BOUCHER. Mr. Gregg, I would like to ask you a question in a different area. You mentioned in your testimony that as long as we have a reliable and efficient market for wholesale power that it would be possible to utilize coal to a higher degree in places like West Virginia, and perhaps in places like my district in Virginia, and export that power, utilizing the transmission grid, and making wholesale transactions to places where that power is in demand.

Do you perceive that we have a problem with the reliability and the efficiency of the wholesale market today, and I guess that question relates primarily to the reliability of transmission, and whether there are problems in that area?

Mr. GREGG. Well, obviously there are transmission bottlenecks throughout our country. The transmission system was not designed for long distance bulk transfer. It was designed for reliability and interconnection between adjacent utilities, and only over time did it become used for long distance transmission.

Now we are starting to have a more rationalized wholesale market. We are recognizing bottlenecks, and in fact the emerging regional transmission organizations that are coming about because of the Federal Energy Regulatory Commission's Order 880 will end up developing pricing mechanisms that will bird dog those bottlenecks, and give financial incentives to solve them.

For example, one of the most critical bottlenecks existing in the Eastern United States today is in Southwestern Virginia on the AEP system. There is a 765,000 volt power line that has been proposed for the past 12 years.

Mr. BOUCHER. I am quite familiar with that.

Mr. GREGG. We have approved our segment in West Virginia for several years now, and we are waiting for the final word from Virginia. That, when completed, will alleviate at least that bottleneck, but there are others.

And the continued evolution of regional transmission organizations and regional power exchanges, hopefully without the restrictions that California imposed on its power exchange, will lead to a more rational pricing structure. It will give the proper signals so that the cheapest, most efficient producers, which in our region are base load coal producers, can compete on a level playing field.

Mr. BOUCHER. My question really relates more to problems that exist with the existing transmission network in terms of assured access to the network, and so that, for example, firm transmission pricing can be awarded as a component of a futures contract for the sale of power on the wholesale market.

Mr. GREGG. And once again these are——

Mr. BOUCHER. And let me finish my question before you answer if I may. Do you perceive that there are regulatory problems with regard to that circumstance that could not be addressed by the Federal Energy Regulatory Commission within the constraints of current statutory law?

So in other words, do we need to do anything legislatively that would begin to address any such problem that you perceive?

Mr. GREGG. I think it goes without saying that there is a split on the Federal Energy Regulatory Commission and among players in the electricity market, as to whether FERC has or does not have sufficient authority to mandate regional transmission organization structure.

And that is why FERC has taken a more or less hands off or a conjoining type of attitude in trying to get them developed. Obviously a clear delegation of authority by this Congress to FERC to have the last word in establishing regional transmission organizations would be very helpful and would clear the air.

Mr. BOUCHER. Thank you.

Mr. BARTON. Does the gentleman from Arizona wish to make a comment or ask a question?

Mr. SHADEGG. Mr. Chairman, I was here for some of the opening statements of some of the members of this panel. I want to thank them for their time, and I want to thank you for holding the hearing.

We produce some coal in Arizona, in Northern Arizona, and it produces some good inexpensive electrical power, and we scrub it and keep it clean, and we are very glad to be able to do so. I understand that most of the questions that I would have asked of this panel have been asked, and I just want to thank them for their time and thank you for holding the hearing.

Mr. BARTON. Well, let me wrap it up then. I want to make a statement and then make an announcement. We have 6,000 quads of energy in coal reserves in this country. That is more recoverable reserves at today's prices than every other domestic resource in this country combined; uranium, oil, natural gas, renewable, hydroelectric, solar, wind, you name it.

You combine all of those and they are slightly more than half of what we have in coal. Coal is the only resource that we are a net exporter of. We import natural gas, and we import oil, and we import hydroelectric, and we import uranium.

So if you really want a comprehensive national energy policy, you have to include coal in it. You have to. You cannot not do it and be rational. So this subcommittee, as we put together our policy on a bipartisan basis with the administration, is looking for innovative ways, common sense ways, to increase the use of coal in an environmentally acceptable fashion.

So whatever group you are representing, if you have got some ideas, get them to the members on either side of the aisle that you feel most comfortable working with, because we are going to look at this near term.

Having said that, our next hearing next week, we are going from globally looking at a domestic resource like coal, to a very specific series of hearings on the electricity crisis in California.

On Tuesday, we are going to have the FERC Commissioners to give us their view, next Tuesday, on March 20. Then on Thursday, March 22, we are going to have some California officials and private sector official representatives to tell us their view.

And to go to Mr. Gregg's comment, if in fact there needs to be a legislative solution or clarify for anything to help in California this summer, this subcommittee has got to act on that very quickly, and I mean like within this month or the early part of next month.

So after our California hearing next week, we are going to sit down and look to see what and if there is any legislative solution that needs to be moved, and if there is, I have already got the commitment of the full committee chairman that we will do that very, very quickly.

So this week's hearing is a little bit more global, but next week's two hearings are very specific, and very short timeframe, if in fact we are going to try and act to try to help our people, not just in California, but in the entire Western Region, because it is not just a State problem. It is a regional problem.

With that, I want to thank this panel. Your testimony has been very helpful, and again you all were very forthcoming in preparing it and presenting it, and I appreciate the dialog. The hearing is adjourned.

[Whereupon, at 4:01 p.m. the subcommittee was adjourned.]

[Additional material submitted for the record follows:]

WISCONSIN ENERGY CORPORATION
April 12, 2001

The Honorable JOE BARTON
Chairman, Energy and Air Quality Subcommittee
House Energy and Commerce Committee
Washington, DC 20515

DEAR CHAIRMAN BARTON:

First, I would like to express my appreciation for the opportunity to testify recently before the **Energy and Air Quality Subcommittee Hearing on a National Energy Policy and Coal**. Let me commend you again for holding the hearing on such an important issue.

During the hearing you invited me to respond with my ideas and thoughts regarding tax incentives to support the construction of needed generation.

As I noted in my remarks, America needs fuel diversity in generating power to ensure flexibility in meeting future energy needs. A diverse fuel mix helps protect businesses and consumers from fuel shortages and price volatility. We need long-term solutions for expanding energy supply.

The electric industry is one of the most capital-intensive industries in this country, requiring nearly four dollars in investment for each dollar of annual revenue. Thus, cost recovery—including the federal income tax rules providing for depreciation and amortization of assets—is of vital importance. The present 15-20 year depreciation requirement for generating assets discourages badly needed investment in the construction of new electric generation facilities.

There is an urgent need for new electric generation to support a sound economy. Price volatility and power shortages will only worsen until adequate generation is available to support the growing demand for electricity. We believe Congress needs to consider legislation to foster capital formation. We also believe shorter depreciation lives and an investment credit should be adopted. This is not unlike other times in the history of our country when Congress recognized the need for capital formation incentives and acted accordingly. The post WWII period and the OPEC oil embargo of the 1970's are examples of times when Congress responded appropriately.

Specifically, we support the following tax law changes:

- To encourage investments in generation, depreciable lives should be reduced from their current cost recovery period of 15 or 20 years to 7 years. The current electric industry depreciable lives are longer than those of any manufacturing segment.
- To encourage fuel diversity and cleaner, more efficient electricity generation from clean coal technologies a 10% investment credit should be passed. As part of this credit, an additional 1% should be allocated to labor along the lines of the old TRASOP credit.
- Finally a credit for replacing older, less efficient plants with new, cleaner and more efficient plants or a credit for retrofitting older plants should be adopted.

Congressional action is needed to cure the power supply emergency facing our country. We encourage you to modernize the tax treatment of new electric generating capacity to reflect the technical, environmental and economic realities of the current structure of the electric industry. Doing so would greatly advance the public interest by insuring against the dire economic consequences that necessarily accompany electricity shortfalls.

Mr. Chairman, thank you again for the opportunity to testify before your subcommittee and to provide additional information on our ideas for tax incentives. I have attached a more detailed description of the suggested tax law changes outlined in the bullet points. I would be pleased to provide additional information on any of these issues.

Sincerely,

RICHARD A. ABDOO
Chairman of the Board, President and Chief Executive Officer

Attachment

ELECTRIC GENERATION TAX INCENTIVES

Seven Year Cost Recovery

With regard to depreciation, the recovery periods permitted under current law for assets used to produce and distribute electricity are much longer than the recovery periods allowed for other capital intensive industries. As in every other instance of a heavily regulated industry undergoing deregulation, new technology is being developed and deployed at a much more rapid pace and makes obsolete many prior investments in property, plant and equipment. With most of our industry's assets placed in the 15-year and 20-year recovery period, the present cost recovery system unjustly penalizes investors in electric generation and makes raising necessary capital much more difficult at a time when the need for additional generation has become critical. Shorter depreciation lives will help to mitigate the economic risk being assumed as companies build new generation.

By contrast to the 15-20 year depreciation lives for electric generation assets, depreciation lives for other capital intensive manufacturing processes, such as pulp and paper mills, steel mills, lumber mills, foundries, automobile plants, and ship-building facilities, are depreciable for Federal income tax purposes over just 7 years. Chemical plants and facilities for the manufacture of electronic components and semiconductors can be depreciated over only 5 years. The power plants that generate electricity have useful lives that are similar to this production equipment that have recovery periods in the 7-year range.

Investment Credit and TRASOP

In order to encourage fuel diversity, an investment credit should be directed to the cleaner coal technologies. We need electricity from coal in the mix along with natural gas to ensure flexibility in meeting future energy needs—meeting them in ways that enhance the economy without degrading the environment. And when you consider the multiple uses for natural gas, especially for heating, it's reasonable to question its use for generating substantial amounts of power, especially when considering that the known supplies of natural gas reserves look adequate for only 40 years, based on current consumption. If gas is to be used for new capacity as well as replacing existing coal and nuclear, we are inviting a long-term problem.

As part of the investment credit, we should consider providing an additional 1% credit to employees. In the past this credit has taken the form of a TRASOP (Tax Reform Act Stock Ownership Plan). Under this plan a fund was set aside at the rate of 1% of net new investment and allocated to employees who then could purchase stock in the Company for which they worked. The proceeds from the sale of the stock provide additional capital to help fund the construction of needed generation.

Investment Credit for Clean Power

A special credit for replacing older, less efficient plants with new, cleaner and more efficient plants or a credit for retrofitting older plants should be adopted. In addition to allowing for fuel diversity, such a credit would provide the added benefit of reducing multiple emissions.

Conclusion

Given the current twenty year recovery and the enormous capital requirements of new construction, utilities have a preference for nursing along their older facilities rather than committing enormous amounts of capital, the recovery of which would face an uncertain economic, technological, and regulatory future. A seven year recovery would tip the balance in countless decisions to add new facilities and replace or retrofit older, inefficient plants.

Congressional action is needed to cure the power supply emergency facing our country. Congress should modernize the tax treatment of new electric generating capacity to reflect the technical, environmental and economic realities of the current structure of the electric industry. Doing so would greatly advance the public interest by insuring against the dire economic consequences that necessarily accompany electricity shortfalls.

ILLINOIS COAL INDUSTRY WHITE PAPER

THE ILLINOIS COAL INDUSTRY
1999



Underground Mine in Central Illinois

FEBRUARY 2001

ILLINOIS DEPARTMENT OF COMMERCE AND COMMUNITY AFFAIRS

GEORGE H. RYAN
GOVERNOR

PAM McDONOUGH
DIRECTOR

For a copy of the full report
or additional information on the Illinois coal industry contact:

ILLINOIS DEPARTMENT OF COMMERCE AND COMMUNITY AFFAIRS
OFFICE OF COAL DEVELOPMENT AND MARKETING
620 EAST ADAMS STREET, CIPS-4
SPRINGFIELD, IL 62701-1615
217/782-6370
TDD: 800/785-6055
<http://www.commerce.state.il.us>

THE ILLINOIS COAL INDUSTRY

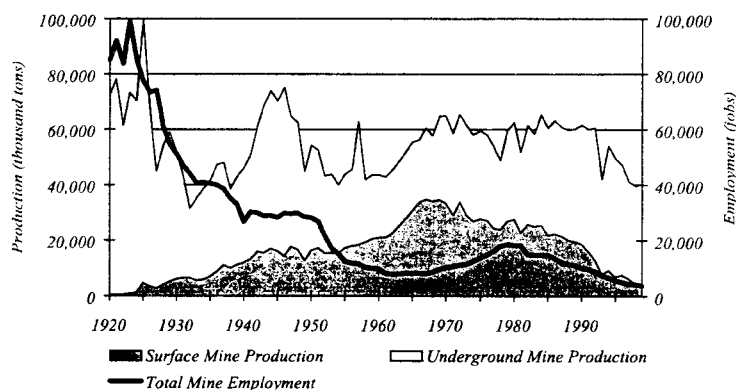
Coal production by the Illinois coal industry has reached the lowest level since 1938 (Figure 1). The 1998 and 1999 production levels reflect a decade-long decline triggered by environmental regulations and competitive price pressures. Phase II of the Clean Air Act Amendments (CAAA) became effect January 1, 2000 and is expected to further reduce coal production in Illinois in the year 2001. Phase II standards have more than halved sulfur dioxide (SO₂) emissions across the United States and new nitrogen oxide (NO_x) standards will take effect in 2003. Mercury and greenhouse gas emission regulations are in various stages of development at the state and federal levels.

Additionally, as the electric utility industry faces increasingly fierce competition, Illinois coal producers are continually pressured to reduce prices. Efficient, low-cost mining operations have become a must for survival as competition among coal suppliers intensifies. If costs cannot be reduced, and prices consistently kept in line with the market, Illinois coal risks losing an even greater portion of its already curtailed electric power generation market share.

ILLINOIS COAL PRODUCTION

Illinois coal production in 1999 was 40.3 million tons, down from 61.7 million tons produced in 1990 (Figure 1). Details of Illinois' coal mines and their production are presented in Table 1.

FIGURE 1. ILLINOIS COAL PRODUCTION AND MINE EMPLOYMENT, 1920 - 1999



Source: Illinois Department of Natural Resources. 2000. [Annual Statistical Report 1999](#)

TABLE 1. CHARACTERISTICS OF ILLINOIS COAL MINES, 1994 - 1999

Coal Operator	Mine Name	County	Mining Method	Coal Seam(s)	Thick. (feet)	Depth (feet)	1999 Mine Jobs ^a	1994 (tons)	1995 (tons)	1996 (tons)	1997 (tons)	1998 (tons)	1999 (tons)
Peabody Coal	Mine #10	Christian	Continuous	6	7.2	380		1,455,788 ^b					
Evon Coal	Mamery #2	Clinton	Continuous	6	7.0	330		3,066,741	2,998,283	1,700,977 ^b			
Ziegler Coal	Old Ben #24	Franklin	Longwall	6	6.8	650		2,076,000	2,325,000	499,486 ^b			
Ziegler Coal	Old Ben #25	Franklin	Longwall	6	7.5	600		1,475,749 ^b					
Ziegler Coal	Old Ben #26	Franklin	Longwall	6	8.5	650		3,050,000	2,973,000	3,136,000 ^b			
Mid-South Coal	Rapatee	Fulton	Surface	6	3.5	67		488,666	460,285	204,940 ^b			
Black Beauty Mining Co.	Wildcat 1 (Bls)	Gallatin	Surface	6, 7	1.1, 3.8	35, 80	128						
Coal Mines, Inc.	Eagle Valley	Gallatin	Continuous	5, Dole	4.5, 3.5	250, 450	286	1,092,620	1,085,750	1,322,136	1,562,594	1,915,866	2,164,583
Central Mining Company	Burning Star #1	Jackson	Surface	6	5.5	30		9,240 ^b					
Blatt Energy Resources	Roadtrack	Jackson	Surface	6	7.5	70	8				139,039	218,401	159,464
Knight Hawk Coal LLC	Creek Pann	Jackson	Surface	Marphydore	4.0	60	24					289,226	655,977
Consolidation Coal	Road Lake	Jefferson	Longwall	6	8.0	733	491	2,706,334	3,269,017	3,186,655	4,083,838	4,897,120	3,760,617
Freeman United Coal	Orest #6	Jefferson	Longwall	6	5.5	722	0	1,431,347	1,438,330	1,112,371	251,992 ^b		
Freeman United Coal	Elbert	Lugen	Continuous	5	5.8	280	280	1,673,732	1,740,561	1,962,241	2,068,589	2,372,928	2,344,174
Freeman United Coal	Crown II	Macoupin	Continuous	6	6.0	330	244	1,643,127	1,583,884	1,790,166	1,947,848	1,386,236	1,525,363
Freeman United Coal	Crown III	Macoupin	Continuous	6	7.2	360	191	1,204,281	1,130,790	1,292,620	1,606,455	1,557,774	1,697,843
Evon Coal	Monterey #1	Macoupin	Longwall	6	6.8	330	315	2,141,641	2,100,655	2,431,630	2,923,460	2,891,402	3,066,324
Freeman United Coal	Industry	McDonough	Surface	2	2.3	50	79	433,884	277,813	532,585	593,375	495,031	504,884
Auch of Illinois	Captain	Perry	Surface	5, 6, 7	9.7	50	194	2,450,424	1,792,081	1,792,081	2,967,925	1,241,603 ^b	
Auch of Illinois	Orest	Perry	Continuous	6	6.0	190	6	1,652,633	1,761,479	1,949,607	2,015,613	2,234,427	2,435,606 ^b
Auch of Illinois	Honewick	Perry	Surface	5, 6, 7	10.1	127		322,261 ^b					
Auch of Illinois	Karlshorn	Perry	Continuous	6	6.2	113		1,630,053	732,210 ^b				
Consolidation Coal	Burning Star #2	Perry	Surface	6	5.7	80		673,811	85,382 ^b				

2

Consolidation Coal	Burning Star #4	Ferry	Surface	5,6	9,5	70	113	2,547,721	2,156,420	2,127,096	1,119,479 ^b	
Old Ben Coal Co.	Ziegler #11	Rendolph	Continuous	6	6.5	265	267	1,780,000	1,501,007 ^c		1925,000	2,388,000
Ziegler Coal	Spartan	Rendolph	Continuous	6	6.0	200	11	1,654,000	1,390,000	2,090,000	1,081,000 ^b	2,516,000
Armstrong Coal Co.	Galatin	Saline	Longwall	5	8.0	550	567	4,017,227	5,510,459	6,520,342	4,968,610	5,508,603
Asa ^d	Big Ridge	Saline	Continuous	5	6.0	150	177	1,341,973	1,445,910	1,451,912	1,433,826	1,537,862
Brushy Creek Coal	Brushy Creek	Saline	Continuous	6	5.7	250	26	1,122,958	986,459	576,578	891,827	1,015,531
Jackson Fuel ^e	Mine #4	Saline	Surface	David Daley	40,2.5	125,103	138	316,122	345,934	673,072	985,701	880,483
Tried Mining Inc.	Cedar Creek	Schuyler	Surface	2	2.5	20	37	605,560	500,103	417,043	460,981 ^b	1,085,650
Black Beauty Coal	Roda	Vernon	Continuous	6	5.8	250	71			123,262	635,443	795,040
Walsh Mine Holding Co.	Walsh	Walsh	Continuous	5	6.7	890	165	3,093,838	4,097,163	3,239,665	1,588,024	3,995,220
Pickbody Coal	Marion	Washington	Continuous	6	6.5	200	9	2,452,235	3,258,994	3,673,750	3,995,220	4,065,151
White County	Paula	White	Continuous	6	6.0	1,006	233	1,977,391	1,807,726	1,796,342	2,008,790	2,008,790
Cottonwood Coal	Mine #1	Williamson	Surface	5	4	70				36,292 ^b		2,327,101
Ararat Coal	Delta	Williamson	Surface	6.7	7.0	120		1,387,598	1,251,154	521,484 ^b		
TOTAL:							4,377	54,056,566	49,537,182	47,311,477	41,247,632	59,639,334
												40,315,298

Notes: ^a As of 12/31. ^b Last year of active mining. ^c Reopened production January 1997.

Source: Illinois Department of Natural Resources, 2000. Annual Statistical Report 1999.

ILLINOIS COAL MINES

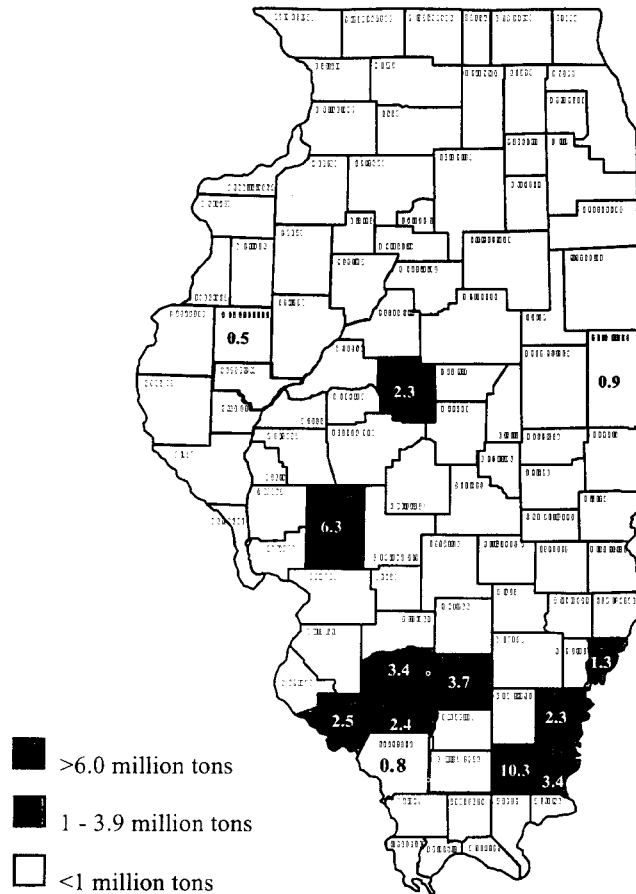
Twenty coal mines were in operation during 1999; five surface mines, three longwall mines, and 12 continuous miner operations. Three mines ceased operations during 1999. The Conant mine closed due to exhausted reserves. The Brushy Creek mine closed due to geologic problems, although the company hopes to reopen the mine in 2001. The Marissa mine closed when the Baldwin power station switch to western fuel supplies.

The top five producers in Illinois during 1999 were Kerr-McGee's Galatia mine, Consolidation's Rend Lake mine, Peabody's Marissa mine, Exxon's Monterey #1 mine, Old Ben's Zeigler #11 mine and Arch of Illinois' Conant mine. The top coal-producing county in Illinois for 1999 was Saline with 10.3 million tons, followed by Macoupin with 6.3 million tons (Figure 2). Jefferson, Gallatin and Washington counties each produced over three million tons in 1999. Randolph, Perry, Logan and White counties each produced over two million tons. Wabash County produced over one million tons and Vermillion, Jackson and McDonough counties each came in under one million tons.

ILLINOIS COAL MINE EMPLOYMENT

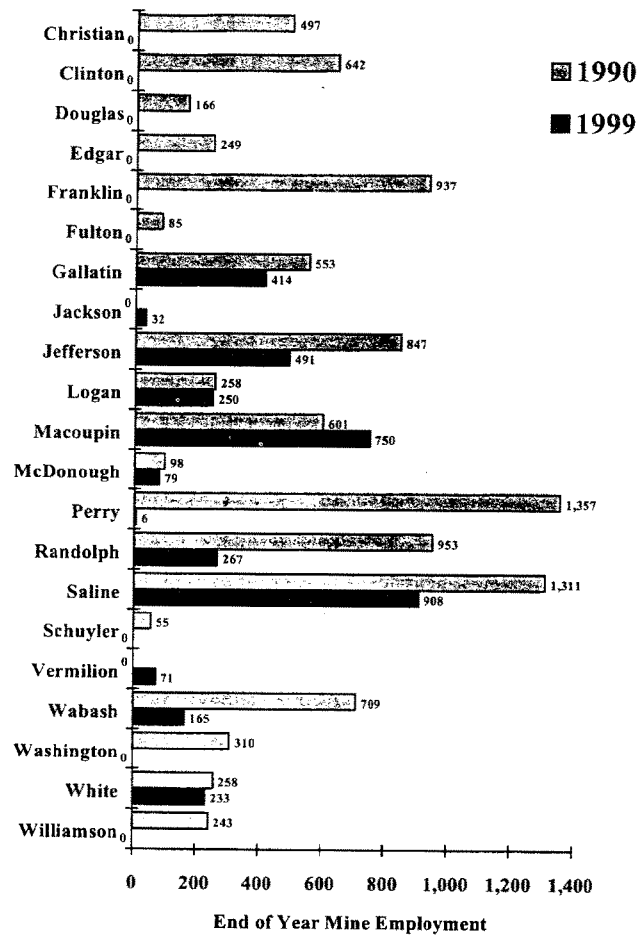
With declines in production and the total number of operating mines come related decreases in mine employment figures. Year-end employment at Illinois coal mines in 1999 was 3,675, dropping below 4,000 for the first time since the state began tracking employment statistics in 1925. This figure represents a loss of 584 jobs from 1998 year-end employment levels. Since passage of the Clean Air Act Amendments of 1990, more than 6,000 mine jobs (60 percent) have been eliminated, while the number of mining operations has been cut in half. Those counties most affected by mine closures and the subsequent employment losses have been Perry, Franklin, Clinton, Randolph and Wabash (Figure 3). Each of these counties lost more than 500 well-paid mine jobs since 1990.

FIGURE 2. ILLINOIS COAL PRODUCTION BY COUNTY, 1999



Source: Illinois Department of Natural Resources, 2000. [Annual Statistical Report 1999](#)

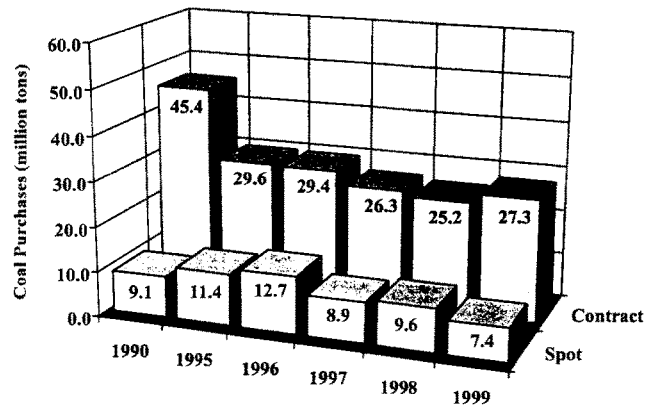
FIGURE 3. ILLINOIS MINE EMPLOYMENT BY COUNTY, 1990 AND 1999

Source: Illinois Department of Natural Resources, 2000, Annual Statistical Report 1999

COAL PURCHASING TRENDS

1997 marked the halt of a recent trend for Illinois coal sales. For the first time since 1992, spot market transactions (utility purchases) decreased as a percentage of total sales (Figure 4). This trend has continued through 1999. In 1996, spot market sales accounted for 43 percent of utility purchases, with contract coal purchases accounting for the remaining 57 percent. By 1999, contract coal made up 73 percent of coal purchases by electric utilities.

FIGURE 4. TRENDS IN CONTRACT VS. SPOT PURCHASES OF ILLINOIS COAL



Source: Resource Data International, 2001. CoalDat Market Analyzer.

(million tons)

1990

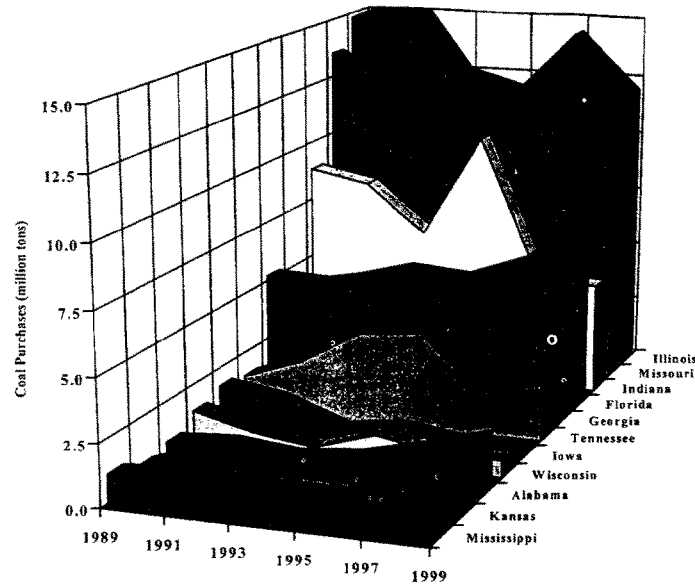
0.1 0.7 0.4 12.0 0.2 1.6 2.2 1.4 2.3 1.1

0.1 0.3 1.2 1.6 9.6 0.7 1.1 0.5

UTILITY MARKETS FOR ILLINOIS COAL

The success of Illinois coal in out-of-state markets continues to be mixed (Figure 6). Most notable is the dramatic increase in Illinois coal use by Florida utilities since 1990. This gain is more than offset by market losses in most other states, especially Missouri, Georgia and Indiana.

FIGURE 6. UTILITY PURCHASES OF ILLINOIS COAL BY STATE, 1989 - 1999

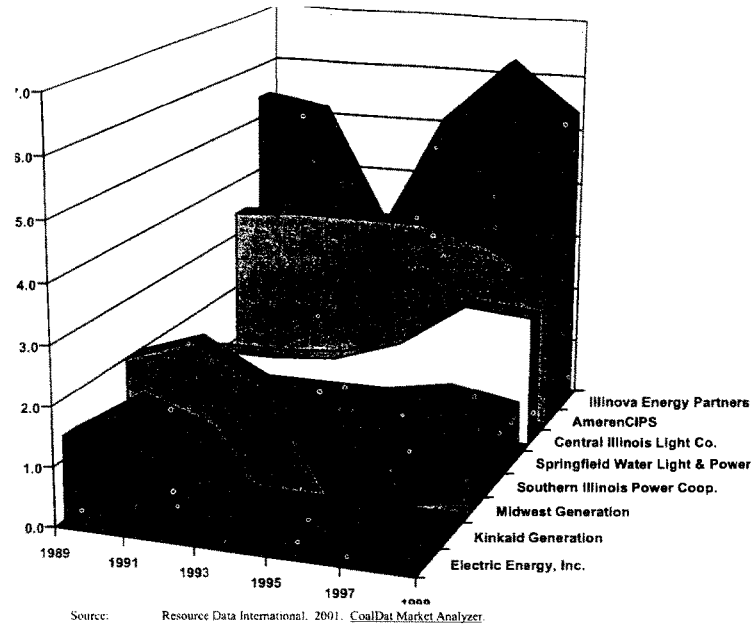


Source: Resource Data International. 2001. *CoalDat Market Analyzer*.

Sales of Illinois coal to Illinois utilities were 12.0 million tons in 1999, down slightly from previous highs of 14.4 million tons in 1997 and 15.8 million tons in 1991 (Figure 6). Illinova Energy Partners (formerly Illinois Power), AmerenCIPS (formerly CIPS), Central Illinois Light Company and Southern Illinois Power Cooperative continued to be strong markets for Illinois coal, purchasing 5.4, 2.6, 2.3, 1.0 and 0.8 million tons each, respectively, in 1999 (Figure 7).

Electric Energy, Midwest Generation (formerly ComEd) and Kincaid Generation (formerly owned by ComEd) have essentially ended their use of Illinois coal with the 1995 implementation of Phase I of the Clean Air Act Amendments of 1990. Illinova Energy Partners, Central Illinois Light Company and Southern Illinois Power Cooperative have all increased their use of Illinois coal since 1995.

FIGURE 7. ILLINOIS COAL USE BY ILLINOIS UTILITIES, 1989 - 1999



Utility markets for Illinois coal that have remained relatively steady over the past decade include Illinova Energy Partners, AmerenCIPS, Northern Indiana Public Service Company, Seminole Electric Cooperative, Mississippi Power, Springfield City Water Light & Power and Southern Illinois Power Cooperative (Figure 8). The announcement last year that Illinova would switch the Baldwin power station to Powder River Basin coal is expected to dramatically reduce their use of Illinois coal over the next few years.

Utilities that have significantly increased their Illinois coal take include Tennessee Valley Authority, Tampa Electric Company, Gulf Power Company and Central Illinois Light Company (Figure 9).

Utilities that have severely curtailed their use of Illinois coal since 1990 include PSI Energy, AmerenUE, Georgia Power, Midwest Generation, Electric Energy, and Associated Electric Cooperative (Figure 10).

FIGURE 8. STEADY MARKETS FOR ILLINOIS COAL, 1989 - 1999

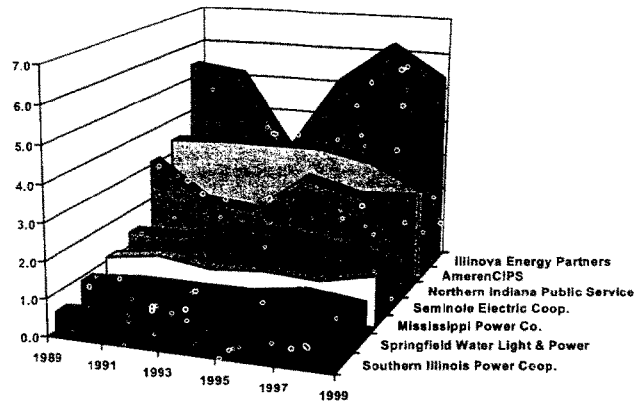
Source: Resource Data International. 2001. CoalDat Market Analyzer.

FIGURE 9. EXPANDING MARKETS FOR ILLINOIS COAL, 1989 - 1999

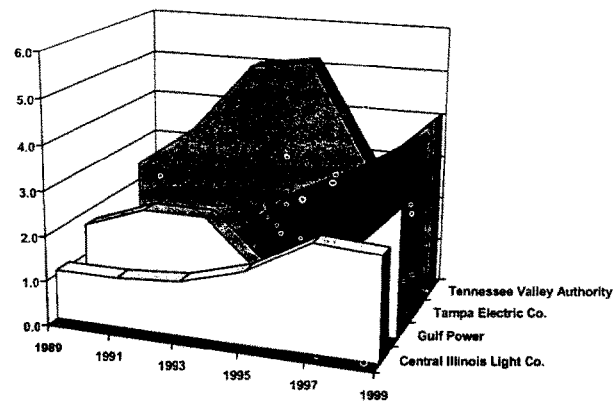
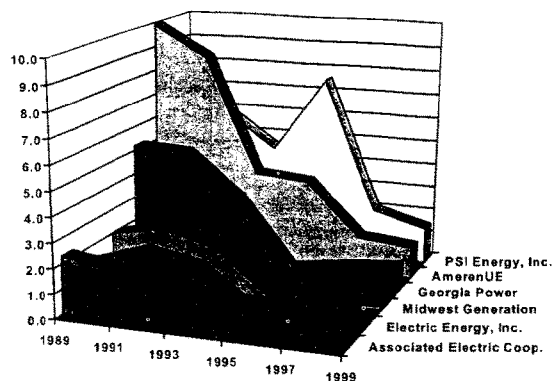
Source: Resource Data International. 2001. CoalDat Market Analyzer.

FIGURE 10. DECLINING MARKETS FOR ILLINOIS COAL, 1989 - 1999



Source: Resource Data International. 2001. *CoalDat Market Analyzer*.

EXPORTS OF ILLINOIS COAL

Exports of Illinois coal have become almost nonexistent in recent years, following an all-time high of 2.7 million tons in 1995 (Table 2). The United States is generally considered a swing supplier into European markets. Increased competition from foreign suppliers and weak international market prices have reduced foreign demand in recent years.

COAL IMPORTS BY ILLINOIS UTILITIES

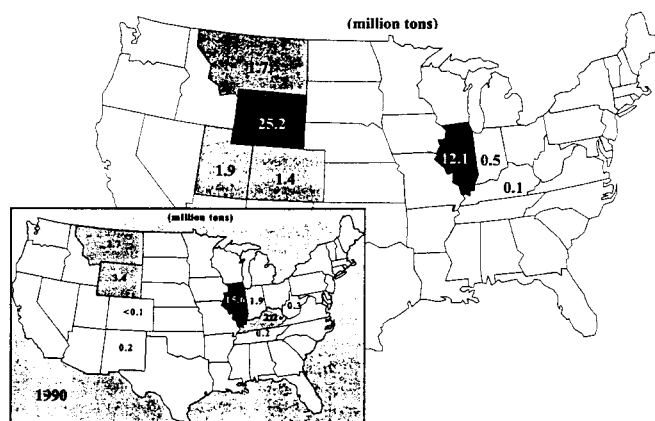
Probably the most prominent trend since the passage of the Clean Air Act Amendments of 1990 is the steady increase in coal entering Illinois from other coal-producing states. Illinois utilities utilized 40.4 million tons of coal in 1999. Of this, 70 percent or 28.6 million tons were from other states (Figure 11). Wyoming coal producers have gained the lion's share of the Illinois market, increasing their sales to Illinois utilities from 3.4 million in 1990 to 25.2 million in 1999. The single biggest factor for this increase has been the lower-sulfur content of the Powder River Basin coal, which makes it a more attractive choice for CAAA compliance purposes. In addition, extremely low production costs and an abundant supply have helped make the Wyoming coal fiercely competitive in Illinois and other Midwest markets. Illinois utilities confronted with Phase II CAAA compliance decisions have, for the most part, chosen to switch to lower-sulfur western coal rather than install scrubbers necessary to continue burning Illinois coal.

TABLE 2. ILLINOIS COAL EXPORTS, 1993 - 1999

EXPORT TONS (000's)	1993	1994	1995	1996	1997	1998	1999
Belgium & Luxembourg	--	--	--	76	--	--	--
Brazil	--	--	--	1	--	--	--
Denmark	--	--	516	364	--	--	--
France	--	--	57	--	--	--	--
Germany, FR	--	--	722	325	58	--	--
Ireland	108	--	--	--	--	--	--
Italy	--	--	42	--	--	--	--
Japan	109	236	49	66	55	99	--
Morocco	452	--	775	103	--	--	--
Netherlands	--	--	--	120	--	--	--
Sweden	--	--	--	25	--	--	--
United Kingdom	--	--	538	805	662	208	--
Unknown	--	--	538	805	662	--	65
TOTALS	670	236	2,699	1,886	773	307	65

Source: Energy Information Administration. 2000. Coal Industry Annual, 1999.

FIGURE 11. ORIGIN OF COAL RECEIVED AT ILLINOIS UTILITIES, 1999



Source: Resource Data International. 2001. CoalData Market Analyzer.

